CEYLON

AN ACCOUNT OF THE ISLAND

PHYSICAL, HISTORICAL, AND TOPOGRAPHICAL

WITH

NOTICES OF ITS NATURAL HISTORY, ANTIQUITIES AND PRODUCTIONS

BY

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CONTENTS

OF

THE FIRST VOLUME.

PART I.

PHYSICAL GEOGRAPHY.

CHAPTER I.

GEOLOGY.—MINERALOGY.—GEMS.

Page

I. *General Aspect.*
- Singular beauty of the island . 3
- Its ancient renown in consequence 4
- Fable of its "perfumed winds" (*note*) 4
- Character of the scenery . . 5

II. *Geographical Position* . . . 6
- Ancient views regarding it amongst the Hindus,—"the Meridian of Lanka" . . . 6
- Buddhist traditions of former submersions . . . (*note*) 7
- Errors as to the dimensions of Ceylon 8
- Opinions of Onesicritus, Eratosthenes, Strabo, Pliny, Ptolemy, Agathemerus 8, 9
- The Arabian geographers . . 9
- Sumatra supposed to be Ceylon (*note*) 10
- True latitude and longitude . 11
- General Fraser's map of Ceylon (*note*) 11
- Geological formation . . . 12
- Adam's Bridge 13
- Error of supposing Ceylon to be a detached fragment of India . 14

III. *The Mountain System* . . 14
- Remarkable hills, Mihintala and Sigiri 15
- Little evidence of volcanic action 16
- Rocks, gneiss 16
- Rock temples 17
- Laterite or "Cabook" . . . 17
- Ancient name Tamba-panni (*note*) 17
- Coral formation 19
- Extraordinary wells . . . 21
- Darwin's theory of coral wells examined . . . . (*note*) 22
- *The soil of Ceylon* generally poor 24
- "Patenas," their phenomena obscure 24
- Rice lands between the hills . 26
- Soil of the plains, "Talawas" . 27

IV. *Metals.*—Tin 29
- Gold, nickel, cobalt . . . 29
- Quicksilver . . . . (*note*) 29
- Iron 30

V. *Minerals.*—Anthracite, plumbago, kaolin, nitre caves . . . 31
- List of Ceylon minerals . (*note*) 32

VI. *Gems*, ancient fame of . . 32
- Rose-coloured quartz . . (*note*) 33
- Mode of searching for gems . 34
- Rubies 36
- Sapphire, topaz, garnet, and cinnamon stone, cat's-eye, amethyst, moonstone . 37, 38
- Diamond not found in Ceylon (*note*) 38
- Gem-finders and lapidaries . 39

VII. *Rivers.*—Their character . . 40
- The Mahawelli-ganga . . 41
- Table of the rivers . . . 41

VIII. *Singular coast formation*, and its causes 43
- The currents and their influence 44
- Word "Gobb" explained 44, (*note*) 46
- Vegetation of the sand formations 48
- Their suitability for the coconut 51

IX. *Harbours.* — Galle and Trincomalie 52
- Tides 52
- Red infusoria 53
- Population of Ceylon . . . 53

CHAP. II.

CLIMATE.—HEALTH AND DISEASE.

- Uniformity of temperature . . . 54
- Brilliancy of foliage 56
- Colombo.—*January*—long shore wind 56
- *February*—cold nights . . (*note*) 57
- *March, April* 58
- *May*—S.W. monsoon 58
  - Aspect of the country before it . 59
  - Lightning 60
  - Rain, its violence 61
- *June* 62

Digitized by Google

Page

July and *August*, *September*, *October*, *November*. N.E. monsoon . . 63
December 64
Annual quantity of rain in Ceylon and Hindustan . . . (*note*) 65
Opposite climates of the same mountain 66
Climate of *Galle* 67
Kandy and its climate 67
Mists and hail 69
Climate of *Trincomalie* (*text and note*) 70
Jaffna and its climate . . . 71
Waterspouts 72
Anthelia 73
Buddha rays 73
Ceylon as a sanatarium.—*Neuera-ellia* 74
Health 75
Malaria 75
Food and wine 76, 77
Effects of the climate of Ceylon on disease 79
Precautions for health . . . 80

CHAP. III.

VEGETATION.—TREES AND PLANTS.

The Flora of Ceylon imperfectly known 83
Vegetation similar to that of India and the Eastern Archipelago . . 84
Trees of the sea-borde.—Mangroves. —Screw-pines, Sonneratia . . 85
The Northern Plains. — Euphorbiæ Cassia.—Mustard-tree of Scripture 87
Western coast.—Luxurious vegetation 87
Eastern coast 88
Pitcher plant.—Orchids 88
Vines 89
Botany of the Mountains.—Iron-wood, Bamboo, European fruit-trees. 90
Tea-plant—*Rhododendron*—*Michelia* 90
Rapid disappearance of dead trees in the forests 91
Trees with natural buttresses . 91
Flowering Trees.—Coral tree . . 92
The Murutu — Imbul—Cotton tree —Champac 93
The Upas Tree—Poisons of Ceylon 95
The Banyan 95
The Sacred Bo-tree 97
The India Rubber-tree—The Snake-tree 98
Kumbuk-tree: lime in its bark . 99
Curious Seeds.—The Dorian, *Sterculia fœtida* 99, 100
The Sea Pomegranate . . . 100
Strychnos, curious belief as to its poison 101
Euphorbiæ — The *Cow-tree*, error regarding . . . (*note*) 101
Climbing plants, Epiphytes, and flowering creepers 102
Orchids. — Brilliant terrestrial orchid, the Wanna-raja.—Square-stemmed Vine 103
Gigantic climbing Plants . . . 104
Enormous bean 105
Bonduc seeds. — Ratans — Ratan bridges 106
Thorny Trees. — Raised as a natural fortification by the Kandyans . 107
The buffalo thorn, *Acacia tomentosa* 108
Palms 109
Coco-nut—Talipat 110
Palmyra 111
Jaggery Palm — Areca Palm . 112
Betel-chewing, its theory and uses . 112
Pingos 114
Timber Trees 115
Jakwood—Del— Teak . . . 116
Suria 117
Cabinet Woods.—Satin-wood—Ebony — Cadooberia 117
Calamander, its rarity and beauty 118
Tamarind 119
Fruit-trees 119
Remarkable power of trees to generate cold and keep their fruit chill 121
Aquatic Plants — Lotus, red and blue 123
Desmanthus natans, an aquatic sensitive plant 123

PART II.

ZOOLOGY.

CHAPTER I.

MAMMALIA.

Neglect of Zoology in Ceylon . . 127
Monkeys 128
Wanderoo 129
Error regarding the *Silenus Veter* . . . . . . (*note*) 129
Presbytes Cephalopterus . . 130
P. Ursinus in the Hills . . 131
P. Thersites in the Wanny . . 132
P. Priamus, Jaffna and Trincomalie 132
No dead monkey ever found . . 133
Loris 133
Bats 135
Flying fox 135
Horse-shoe bat 136
Carnivora.— Bears 137
Their ferocity 138

Digitized by Google

Page
Singhalese belief in the efficacy of charms . . . . (*note*) 139
Leopards 139
Curious belief 140
Anecdotes of leopards 142
Palm-cat 144
Civet 144
Dogs 144
Jackal 145
The horn of the jackal 145
Mungoos 145
Its fights with serpents . . . 146
Theory of its antidote 147
Squirrels 148
Flying squirrel 148
Tree rat 149
Story of a rat and a snake . . . 149
Coffee rat 149
Bandicoot 150
Porcupine 150
Pengolin 151
Ruminantia.—The Gaur 151
Oxen 152
Humped cattle 152
Encounter of a cow and a leopard 153
Buffaloes 154
Sporting buffaloes 155
Peculiar structure of the hoof . 155
Deer 156
Meminna 157
Elephants 158
Whales 158
General view of the mammalia of Ceylon 159
List of Ceylon mammalia 159
Curious parasite of the bat (*note*) 161

CHAP. II.

BIRDS.

Their numbers 163
Songsters 163
Hornbills, the "bird with two heads" 164
Pea fowl 165
Sea birds, their number . . . 165
I. *Accipitres*.—Eagles 166
Falcons and hawks . . . 166
Owls—the devil bird 167
II. *Passeres*.—Swallows 167
Kingfishers—sunbirds . . . 168
Bul-bul—tailor bird—and weaver 169
Crows, anecdotes of 170
III. *Scansores*.—Parroquets . . . 172
IV. *Columbidæ*.—Pigeons . . . 173
V. *Gallinæ*.—Jungle-fowl . . . 174
VI. *Grallæ*.—Ibis, stork, &c. . . 175
VII. *Anseres*.—Flamingoes . . . 175
Pelicans 176
Game.—Partridges, &c. . . . 176
List of Ceylon birds 177
List of birds peculiar to Ceylon . . 180

CHAP. III.

REPTILES.

Lizards.—Iguana 182
Kabragoya, barbarous custom in preparing the cobra-tel poison (*note*) 183
The green calotes 184
Chameleon 184
Ceratophora 185
Geckoes,—their power of reproducing limbs 185, 186
Crocodiles 186
Their power of burying themselves in the mud 187
Tortoises.—Curious parasite . . . 188
Land tortoises 189
Edible turtle 190
Huge Indian tortoises . (*note*) 190
Hawk's-bill turtle, barbarous mode of stripping it of the tortoise-shell 190
Serpents.—Venomous species rare . 191
Cobra de capello 192
Instance of land snakes found at sea 193
Tame snakes . . . . (*note*) 193
Singular tradition regarding the cobra de capello 194
Uropeltidæ.—New species discovered in Ceylon 195
Buddhist veneration for the cobra de capello 195
Anecdotes of snakes 196
The Python 196
Water snakes 197
Snake stones 197
Analysis of one 199
Cæcilia 201
Large frogs 202
Tree frogs 202
List of Ceylon reptiles 203

CHAP. IV.

FISHES.

Ichthyology of Ceylon, little known . 205
Fish for table, seir fish 205
Sardines, poisonous? 206
Sharks 207
Saw-fish 207
Fish of brilliant colours 207
Curious fish described by Ælian (*note*) 207
Fresh-water fish, little known,—not much eaten 208
Fresh-water fish in Colombo Lake . 209
Immense profusion of fish in the rivers and lakes 209
Their re-appearance after rain . . 209
Mode of fishing in the ponds . . 210
Showers of fish 210
Conjecture that the ova are preserved, not tenable 212
Fish moving on dry land 213
Instances in Guiana . (*note*) 214
Perca Scandens, ascends trees . 215
Doubts as to the story of Daldorf . 217
Fishes burying themselves during the dry season 218
The *protopterus* of the Gambia . 218
Instances in the fish of the Nile . 218
Instances in the fish of South America 219
Living fish dug out of the ground in the dry tanks in Ceylon . 220
Other animals that so bury themselves, Melaniæ, Ampullariæ, &c. 220

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Page
The animals that so bury themselves in India . . (note) 220
Analogous case of . . (note) 221
Theory of æstivation and hybernation 221
Fish in hot-water in Ceylon . . 224
List of Ceylon fishes 224
Instances of fishes falling from the clouds 226
Overland migration of fishes known to the Greeks and Romans . . 227
Note on Ceylon fishes by Professor Huxley 229
Comparative note by Dr. Gray, Brit. Mus. 231

CHAP. V.

MOLLUSCA, RADIATA, AND ACALEPHÆ.

I. *Conchology.*—General character of Ceylon shells 233
Confusion regarding them in scientific works and collections 234
List of Ceylon shells 235
II. *Radiata.*—Star fish 244
Sea slugs 245
Parasitic worms 245
Planaria 245
III. *Acalephæ*, abundant 246
Corals little known 246

CHAP. VI.

INSECTS.

Profusion of insects in Ceylon . . 247
Imperfect knowledge of . . . 247
I. *Coleoptera.*—Beetles 248
Scavenger beetles 249
Coco-nut beetles. 249
Tortoise beetles 250
II. *Orthoptera.*—Mantis and leaf-insects 250
Stick-insects 252
III. *Neuroptera.*—Dragon flies . . 252
Ant-lion 252
White ants. 253

Page
Anecdotes of their instinct and ravages . . (text and note) 254
V. *Hymenoptera.*—Mason Wasps . 256
Wasps 257
Bees 257
Carpenter Bee 258
Ants 258
Burrowing ants 262
VI. *Lepidoptera.*—Butterflies . . 262
Sylph. 263
Lycænidæ 264
Moths. 265
Silk worms. (text and note) 265
Wood-carrying Moths . . 266
Pterophorus 267
VII. *Homoptera* 267
Cicada 267
VIII. *Hemiptera* 267
Bugs 267
IX. *Aphaniptera* 268
X. *Diptera.*—Mosquitoes 268
General character of Ceylon insects . 269
List of insects in Ceylon . . . 274

CHAP. VII.

ARACHNIDÆ, MYRIOPODA, CRUSTACEA, ETC.

Spiders 294
Strange nests of the wood spiders . 295
Olios Taprobanius 295
Mygale fasciata 295
Ticks 296
Mites.—*Trombidium tinctorum* . 297
Myriapods.—Centipedes . . . 297
Cermatia 298
Scolopendra crassa . . . 298
S. pollipes 299
Millipeds.—Iulus 299
Crustacea 300
Calling crabs 300
Land crabs 301
Painted crabs 301
Paddling crabs 301
Annelidæ, Leeches.—The land leech . 302
Medical leech 305
Cattle leech 306
List of Articulata, &c. . . . 307

PART III.

THE SINGHALESE CHRONICLES.

CHAPTER I.

SOURCES OF SINGHALESE HISTORY. — THE MAHAWANSO.

Ceylon formerly thought to have no authentic history 311
Researches of Turnour 312
Biographical sketch of Turnour (note) 312
The Mahawanso 314
Recovery of the "*tika*" on the Mahawanso 315
Outline of the Mahawanso . . . 315
Turnour's *epitome* of Singhalese history 316
Historical proofs of the Mahawanso . 317
Identity of Sandracottus and Chandragupta 318
Ancient map of Ceylon . (note) 318
List of Ceylon sovereigns . . . 320

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CHAP. II.

THE ABORIGINES.

	Page
Singhalese histories all illustrative of Buddhism	325
A Buddha	325
Gotama Buddha, his history	326
Amazing prevalence of his religion (*note*)	326
His three visits to Ceylon	327
Inhabitants of the island at that time supposed to be of Malayan type	327
Legend of their Chinese origin	328
Probably identical with the aborigines of the Dekkan	328
Common basis of their language	328
Characteristics of vernacular Singhalese	329
State of the aborigines before Wijayo's invasion	330
Story of Wijayo	330
The natives of Ceylon described as *Yakkos* and *Nagas*	331
Traces of serpent-worship in Ceylon	331
Coincidence of the Mahawanso with the Odyssey (*note*)	332

CHAP. III.

CONQUEST OF WIJAYO, B.C. 543. — ESTABLISHMENT OF BUDDHISM, B.C. 307.

Early commerce of Ceylon described by the Chinese	335
Wijayo as a colonizer	336
His treatment of the native population	336
B.C. 505. His death and successors	336
A number of petty kingdoms formed	337
Ceylon divided into three districts: Pihiti, Rohuna, and Maya	337
The village system established	337
Agriculture introduced	338
Irrigation imported from India	338
The first tank constructed, B.C. 504 (*note*)	338
Rapid progress of the island	339
Toleration of Wijayo and his followers	339
Establishment of Buddhism, 307 B.C.	340
Preaching of Mahindo	340
Planting of the sacred Bo-tree	341

CHAP. IV.

THE BUDDHIST MONUMENTS.

	Page
Buddhist architecture introduced in Ceylon	344
The first *dagobas* built	345
Their mode of construction and vast dimensions	346
The earliest Buddhist *temples*	346
Images and *statues* a later innovation	347
First residences of the priesthood	317
The formation of *monasteries* and *wiharas*	348
The first wihara built	349
Form of the modern wiharas	349
Inconvenient numbers of the Buddhist priesthood	350
Originally fed by the kings and the people	350
Caste annulled in the case of priests	351
The priestly robe and its peculiarities	351

CHAP. V.

SINGHALESE CHIVALRY.—ELALA AND DUTUGAIMUNU.

Progress of civilisation	352
The new settlers agriculturists	352
Malabars enlisted as soldiers and seamen	353
B.C. 237. The revolt of Sena and Gutika	353
B.C. 205. Usurpation of Elala	353
His character and renown	353
The victory of Dutugaimunu	354
Progress of the south of the island	355
Building of the great Ruanwellé Dagoba	355
Building of the Brazen Palace	356
Its vicissitudes and ruins	357
Death and character of Dutugaimunu	358

CHAP. VI.

THE INFLUENCES OF BUDDHISM ON CIVILISATION.

The Mahawanse or Great Dynasty	360
The Suluwanse or Inferior Dynasty	360
Services rendered by the Great Dynasty	360
Frequent usurpations and the cause	361
Disputed successions	361
Rising influence of the priesthood	362
B.C. 104. Their first endowment with land	363
Rapid increase of the temple estates	364
Their possessions and their vow of poverty reconciled	364
Acquire the compulsory labour of temple-tenants	365
Impulse thus given to cultivation	365
And to the construction of enormous tanks	365
Tanks conferred on the temples	365
The great tank of Minery formed, A.D. 272	365
Subserviency of the kings to the priesthood	366
Large possessions of the temples at the present day	366
Cultivation of flowers for the temples	367
Their singular profusion	367
Fruit trees planted by the Buddhist sovereigns	367
Edicts of Asoca	368

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CHAP. VII.

FATE OF THE ABORIGINES.

Page
Aborigines forced to labour for the new settlers 369
Immensity of the structures erected by them 370
Slow amalgamation of the natives with the strangers 370
The worship of snakes and demons continued 370
Treatment of the aborigines by the kings 371
Their formal disqualification for high office 371
Their rebellions 371
They retire into the mountains and forests 372
Their singular habits of seclusion . 372
Traces of their customs at the present day 373

CHAP. VIII.

EXTINCTION OF THE GREAT DYNASTY.

B.C. 104. Walagam-bahu I. . . 374
His wars with the Malabars . . 374
The South of Ceylon free from Malabar invasion 374
The Buddhist doctrines first formed into books 375
The formation of rock-temples . . 376
Apostacy of Chora Naga . . . 376
Ceylon governed by queens . . 377
Schisms in religion 377
Buddhism tolerant of heresy but intolerant of schism 378
Illustrations of Buddhist toleration . 377
Tolerance enjoined by Asoca . . 377
The Wytulian heresy . . . 377
Corruption of Buddhism by the impurities of Brahmanism . . . 380
A.D. 275. Recantation and repentance of King Maha Sen . . . 380
End of the Solar race . . . 381
State of Ceylon at that period . . 381
Prosperity of the North . . . 381
Description of Anarajapoora in the fourth century 382
Its municipal organisation . . 382
Its palaces and temples . . . 382
Popular error as to the area of the city (*note*) 383
Multitudes of the priesthood described by Fa Hian 384

CHAP. IX.

KINGS OF THE LOWER DYNASTY.

Sovereigns of the Lower Dynasty, a feeble race 385
Kings who were sculptors, physicians, and poets 386
Earliest notice of Foreign Embassies to Rome and to China . . . 387
Notices of Ceylon by Chinese Historians 387
Page
Fa Hian visits Ceylon A.D. 413 . 387
Anecdote related by Fa Hian (*note*) 388
History of "the Sacred Tooth" . 388
Murder of the king Dhatu Sena, A.D. 459 389
Infamous conduct of his son . . 391
The fortified rock Sigiri . . . 392

CHAP. X.

DOMINATION OF THE MALABARS.

Origin of the Malabar invaders of Ceylon . . . , . . . 395
The ancient Indian kingdom of Pandya 395
Malabar mercenaries enlisted in Ceylon 395
B.C. 237. Revolt of Sena and Gutika 395
B.C. 205. Usurpation of Elala . 396
B.C. 103. Second Malabar invasion . 396
A.D. 110. Third Malabar invasion . 396
Jewish evidence of Malabar conquest . . . . (*note*) 396
A.D 433. Fourth Malabar invasion . 397
The influence of the Malabars firmly established 398
Distress of the Singhalese in the 7th century, as described by Hiouen Thsang 399
A.D. 642. Anarajapoora deserted, and Pollanarrua built 400
The Malabars did nothing to improve the island 401
A.D. 840. A fresh Malabar invasion . 401
The Singhalese seek to conciliate them by alliances 402
A.D. 990. Another Malabar invasion . 402
Extreme misery of the island . . 402
A.D. 1023. The Malabars seize Pollanarrua and occupy the entire north of the island 403

CHAP. XI.

THE REIGN OF PRAKRAMA BAHU.

A.D. 1071. Recovery of the island from the Malabars . . . 404
Wijayo Bahu I. expels the Malabars 405
Birth of the Prince Prakrama . . 405
His character and renown . . . 405
Immense public works constructed by him 406
Restores the order of the Buddhist priesthood 406
Intercourse between Siam and Ceylon 406
Temples and sacred edifices built by Prakrama 407
The Gal-Wihara at Pollanarrua . 407
Ruins of Pollanarrua 408
Extraordinary extent of his works for irrigation 409
Foreign wars of Prakrama . . 409
His conquests in India . . . 410
The death of Prakrama Bahu . . 410

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Page
Vessels with two prows mentioned by Strabo 444
Foreign trade spoken of B.C. 204 . 444
Internal traffic in the ancient city of Ceylon 445
Merchants traversing the island . 445
Early exports from Ceylon,—gems, pearls, &c. 445
The imports, chiefly manufactures . 446
Horses and carriages imported from India 447
Cloth, silk, &c., brought from Persia 447
Kashmir, intercourse with . . . 447
Edrisi's account of Ceylon trade in the twelfth century . . . 448

CHAP. IV.

MANUFACTURES.

Silk not produced in Ceylon . . 450
Coir and cordage 450
Dress; unshaped robes . . . 450
Manual and Mechanical Arts—Weaving 451
Priest's robes spun, woven, and dyed in a day 452
Peculiar mode of cutting out a priest's robe 452
Bleaching and dyeing . . . 452
Earliest artisans, immigrants . . 452
Handicrafts looked down on . . 453
Pottery 453
Glass 454
Glass mirrors 454
Leather 454
Wood carving 454
Chemical Arts—Sugar . . . 455
Mineral paints 455

CHAP. V.

WORKING IN METALS.

Early knowledge of the use of iron . 457
Steel 457
Copper and its uses 457
Bells, bronze, lead 458
Gold and silver 458
Plate and silver ware 458
Red coral found at Galle . (*note*) 459
Jewelry and mounted gems . . 459
Gilding.—Coin 460
Coins mentioned in the Mahawanso *n.* 460
Meaning of the term "massa" (*note*) 460
Coins of Lokiswaira 461
General device of Singhalese coins . 461
Indian coinage of Prakrama Bahu . 462
Fish-hook money 463

CHAP. VI.

ENGINEERING.

Engineering taught by the Brahmans 464
Rude methods of labour . . . 464
Military engineering unknown . . 465
Early attempts at fortification . . 465
Fortified rock of Sigiri . . . 465

Page
Forests, their real security . . 466
Thorns planted as defences . . 466
Bridges and ferries 466
Method of tying cut stone in forming tanks 467
Tank sluices 467
Defective construction of these reservoirs 467
The art of engineering lost . . 468
The "Giants' Tank" a failure . . 468
An aqueduct formed, A. D. 66 . . 469

CHAP. VII.

THE FINE ARTS.

Music, its early cultivation . . 470
Harsh character of Singhalese music 470
Tom-toms, their variety and antiquity 471
Singhalese gamut 472
Painting.—Imagination discouraged. 472
Similarity of Singhalese to Egyptian art 472
Rigid rules for religious design . 473
Similar trammels on art in Modern Greece . . . . (*note*) 473
And in Italy in the 15th century (*n.*) 474
Celebrated Singhalese painters . 475
Sculpture.—Statues of Buddha . . 475
Built statues 477
Painted statues 477
Statues formed of gems . . . 477
Ivory and sandal-wood carved . 477
Architecture, its ruins exclusively religious 478
Domestic architecture mean at all times 478
Stone quarried by wedges . . 478
Immense slabs thus prepared . 479
Columns at Anarajapoora . . 479
Materials for building . . . 479
Mode of constructing a dagoba . 480
Enormous dimensions of these structures 480
Monasteries and wiharas . . 481
Palaces 482
Carvings in stone 483
Ubiquity of the honours shown to goose 484
Delicate outline of Singhalese carvings 488
Temples and their decorations . 488
Cave temples of Ceylon . . . 489
The Alu-wihara 489
Moulding in plaster 489
Claim of the Singhalese to the invention of oil painting . . 490
Lacquer ware of the present day . 490
Honey-suckle ornament . . . 491

CHAP. VIII.

SOCIAL LIFE.

Ancient cities and their organisation 493
Public buildings, hospitals, shops . 493
Anarajapoora, as it appeared in 7th century 493

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Page
The description of it by Fa Hian . 495
Carriages and Horses 495
Horses imported from Persia . . 495
Furniture of the houses . . . 496
Form of Government.—Revenue . 497
The Army and Navy . . . 498
Mode of recruiting 499
Arms.—Bows 499
Singular mode of drawing the bow with the foot . . . (*note*) 499
Civil Justice 500

CHAP. IX.

SCIENCES.

Education and schools . . . 501
Logic 502
Astronomy and astrology . . . 503
Medicine and surgery . . 504
King Buddha-dasa a physician . . 504
Botany 505
Geometry 505
Lightning conductors . . . 506
Notice of a remarkable passage in the Mahawanso 507

CHAP. X.

SINGHALESE LITERATURE.

The Pali language 512
The temples the depositaries of learning 512
Historiographers employed by the kings 512
Ola books, how prepared . . 513
A stile, and the mode of writing . 513
Books on plates of metal (*note*) 513
Differences between Elu and Singhalese 513
Pali works:
Grammar 514
Hardy's list of Singhalese books (*note*) 515
Pali books all written in verse . 515
The *Pittakas* 515
The *Jatakas*—resemble the Talmud 516
Pali literature generally . . 516
The *Milinda-prasna* . . . 516
Pali historical books and their character 517
The *Mahawanso* 517
Scriptural coincidences in Pali books . . . . (*note*) 518
Page
Sanskrit works:
Principally on science and medicine 520
Elu and Singhalese works:
Low tone of the popular literature 520
Chiefly ballads and metrical essays 521
Exempt from licentiousness . . 521
Sacred poems in honour of Hindu gods 521
General literature of the people . 522

CHAP. XI.

BUDDHISM AND DEMON-WORSHIP.

Buddhism as it exists in Ceylon . 523
Which was the more ancient, Brahmanism or Buddhism . . . 523
Various authorities . . (*note*) 523
Buddhism, its extreme antiquity . 524
Its prodigious influence . . . 524
Sought to be identified with the Druids . . . . (*note*) 524
Buddhism an agent of civilisation . 525
Its features in Ceylon . . . 526
The various forms elsewhere . . 527
Points that distinguish it from Brahmanism 528
Buddhist theory of human perfection 528
Its treatment of *caste* . . . 530
Its respect for other religions . . 530
Anecdote, illustrative of . (*note*) 530
Its cosmogony 531
Its doctrine of "*necessity*" . . . 532
Transmigration 533
Illustration from Lucan . (*note*) 533
The priesthood and its attributes . 534
Buddhist morals 534
Prohibition to take life . . . 534
Form of worship 535
Brahmanical corruptions . . . 536
Failure of Buddhism as a sustaining faith 537
Its moral influence over the people . 538
Demon-worship 539
Trees dedicated to demons (*note*) 540
Devil priests and their orgies . . 541
Ascendency of these superstitions . 542
Buddhism as an obstacle to Christianity 543
Difficulties presented by the morals of Buddhism 544
Prohibition against taking away life . . . . . (*note*) 544

PART V.

MEDIÆVAL HISTORY.

CHAPTER I.

CEYLON AS KNOWN TO THE GREEKS AND ROMANS.

First heard of by the companions of Alexander the Great . . . 549
Various ancient names of Ceylon (*note*) 549
Early doubts whether it was an island or a continent 550
Mentioned by Aristotle . . 550

Digitized by Google

Page
Alleged mention of Ceylon in the Samaritán Pentateuch . (*note*) 551
Onesicritus's account . . . 552
Megasthenes' description . . . 552
Ælian's account borrowed from Megasthenes . . . . (*note*) 552
Ceylon known to the Phœnicians and to the Egyptians . . (*note*) 552
Hippalus discovers the monsoons . 553
Effect of this discovery on Indian trade 554
Pliny's account of Ceylon . . . 555
Story of Jambulus by Diodorus Siculus . . . . . (*note*) 556
Embassy from Ceylon to Claudius . 556
Narrative of Rachias, and its explanation . . . . . (*note*) 557
Lake Megisba, a tank . . . 557
Early intercourse with China . . 558
The Veddahs described by Pliny . 558
Interval between Pliny and Ptolemy 558
Ptolemy's account of Ceylon . . 559
Explanation of his errors . (*note*) 559
Ptolemy discriminates bays from estuaries . . . . . (*note*) 559
Identification of Ptolemy's names . 560
His map 560
His sources of information . 561
Agathemerus, Marcianus of Heraclea 562
Cosmas Indicopleustes . . . 562
Palladius—St. Ambrosius . (*note*) 562
State of Ceylon when Cosmas wrote 563
Its commerce at that period . . 563
In the hands of Arabs and Persians . 564
Ceylon as described by Cosmas . 565
Story of his informant Sopater . . 566
Translation of Cosmas . . . 567
The gems and other productions of Ceylon—"a gaou" . (*note*) 567
Meaning of the term "Hyacinth" (*note*) 568
The great ruby of Ceylon, its history traced . . . . . (*note*) 568
Cosmas corroborated by the Periplus 570
Horses imported from Persia . . 570
Export of elephants 570
Note on Sanchoniathon . . . 571

CHAP. II.

INDIAN, ARABIAN, AND PERSIAN AUTHORITIES.

Absurd errors of the Hindus regarding Ceylon 578
Their dread of Ceylon as the abode of demons 578
Rise of the Mahometan power . . 579
Persians and Arabs trade to India . 579
Story in Beladory of the first invasion of India by the Mahometans (*text and note*) 580
Character of the Arabian geographers 581
Their superiority over the Greeks . 581
Greek *Paradoxical* literature . . 582
A.D. 851. The two Mahometans . 583
Their account of Ceylon . . . 583
Adam's Peak 583
Obsequies of a king 584
Councils on religion and history . 584
Toleration 585
Carmathic monument at Colombo (*note*) 585
Galle, the seat of ancient trade . . 586
Claim of Mantotte disproved . . 587
Greek fire . . . . . (*note*) 588
"*Kalah*" is Galle 589
The Maharaja of Zabedj held possession of Galle 589
Evidence of this in the Garsharsp-Namah 590
Derivation of "Galle" (*text and note*) 591
Aversion of the Singhalese to commerce 592
Identification of the modern Veddahs with the ancient Singhalese . . 593
Their singular habits, as described by Robert Knox, Ribeyro, and Valentyn 593
By Albyrouni. 593
By Palladius 593
By Fa Hian 594
By the Chinese writers (*note*) 594
By Pliny 594
For this reason the coast only known to strangers 595
Arabian authors who describe Ceylon 595
Albateny and Massoudi . . . 595
Tabari . . . . . (*note*) 595
Sindbad the Sailor 596
Edrisi 597
Kazwini 598
Cinnamon, no mention of . . . 599
Was cinnamon a native of Ceylon? . 599
No mention by Singhalese authors . 600
No mention of by Latin writers . . 600
The *Regio Cinnamomifera* was in Africa . . . . . (*note*) 600
No mention by Arabs or Persians 600
First noticed in Ceylon by Ibn Batuta 601
By Nicola di Conti . (*note*) 601
Ibn Batuta describes Ceylon . . 604
His Travels 605

CHAP. III.

CEYLON AS KNOWN TO THE CHINESE.

Early Chinese trade with Ceylon . 607
Early Chinese travellers in India . 607
Chinese translations of M. S. Julien . 608
List of Chinese authors relating to Ceylon . . . . . (*note*) 608
Their errors as to its form and site . 609
Their account of Adam's Peak and its gems 609
Chinese names for Ceylon . . . 610
Curious habit of its traders . . 611
They describe the two races, Tamils and Singhalese 611
Origin of the cotton "Comboy" . 612
Costume of Ceylon 612
Early commerce. 613
Works for irrigation noticed . . 613
Island of Junk-Ceylon . . . 614
Galle resorted to by Chinese ships . 614

Digitized by Google

Page
Vegetable productions . . . 614
Elephants, ivory, and jewels . . 615
Skill of Singhalese goldsmiths and statuaries 615
Pearls and gems sent to China . . 615
No mention of cinnamon . . . 616
Chinese account of Buddhism in Ceylon 616
Monasteries for priests first founded in Ceylon 616
Cities of Ceylon in the sixth century 617
Patriotism of Singhalese kings . . 617
Domestic manners of the Singhalese . 617
Embassies from China to Ceylon . 618
Chinese travels prior to the sixth century 619
Fa Hian's travels in sixth century . 620
First embassy from Ceylon to China, A.D. 405 620
Narrative of the image which it bore (*note*) 620
Ceylon tributary to China in sixth century 620
Hiouen-Thsang describes Ceylon in the seventh century . (*note*) 621
Events in the thirteenth and fourteenth centuries 621
King of Ceylon carried captive to China, A.D. 1405 623
Last embassy to China, A.D. 1459 . 625
Traces of the Chinese in Ceylon . 626
Evidences of their presence found by the Portuguese 626
Modern Chinese account of Ceylon (*note*) 626

CHAP. IV.

CEYLON AS KNOWN TO THE MOORS, GENOESE, AND VENETIANS.

Page
The Moors of Ceylon 629
Their origin 629
The early Mahometans in India . 629
Arabians anciently settled in Ceylon . 630
Real descent of the modern "Moormen" 631
Their occupation as traders, ancestral 632
Their hostilities with the Portuguese 633
They might have been rulers of Ceylon 633
Indian trade prior to the route by the Cape 634
The Genoese and Venetians in the East 634
Rise of the Mongol empire . . 635
Marco Polo, A.D. 1271 635
Visits Ceylon 636
Friar Odoric, A.D. 1318 . . . 636
Jordan de Severac, A.D. 1323 (*note*) 637
Giov. de Marignola, A.D. 1349 (*note*) 637
Nicola di Conti, A.D. 1444 . . . 637
The first traveller who speaks of Cinnamon 638
Jerome de Santo Stefano . (*note*) 639
Ludov. Barthema, A.D. 1506 . . 639
Odoardo Barbosa, A.D. 1509 . . 640
Andrea Corsali, A.D. 1515 . (*note*) 640
Cesar Frederic, A.D. 1568 . . . 641
Course of trade changed by the Cape route 642
Irritation of the Venetians . . 643

ERRATUM.

Vol. I. Page 184, line 8, *for* unrestrained *read* restrained.

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ILLUSTRATIONS IN THE FIRST VOLUME.

MAPS.

		Page
"Gobbs" on the East Coast	By ARROWSMITH	45
"Gobbs" on the West Coast	ARROWSMITH	46
Ceylon, according to the Sanskrit and Pali authors.	SIR J. EMERSON TENNENT *to face*	318
Map of Ancient India	LASSEN „	380
Position of Colombo, according to Ptolemy	SIR J. EMERSON TENNENT „	559
Ceylon, according to Ptolemy and Pliny	SIR J. EMERSON TENNENT *to face*	560

PLANS AND CHARTS.

Geological System		12
Currents in the N. E. Monsoon		43
Currents in the N. W. Monsoon		44
Diagram of Rain in India and in Ceylon	By DR. TEMPLETON	66
Diagram of the Anthelia	DR. TEMPLETON	73
Plan of a Fish-corral		211
Summit of a Dagoba, with Lightning apparatus		509

WOOD ENGRAVINGS.

Marriage of the Fig-tree and the Palm	By MR. A. NICHOLL	96
Fig-tree on the Ruins of Pollanarrua	MR. A. NICHOLL	97
The "Snake-tree"	MR. A. NICHOLL	98
The *Loris*	M. H. SYLVAT	134
The *Uropeltis grandis*	M. H. SYLVAT	195
A *Chironectes*	M. H. SYLVAT	207
Method of Fishing in Pools	From KNOX	210
The *Anabas* of the dry Tanks	By DR. TEMPLETON	220
Eggs of the Leaf Insect	M. H. SYLVAT	251
Cermatia	DR. TEMPLETON	298
The Calling Crab		300
Eyes and Teeth of the Land Leech	DR. TEMPLETON	302
Land Leeches	DR. TEMPLETON	304
Upper and under Surfaces of the *Hirudo sanguisorba*	DR. TEMPLETON	305
The Bo-tree at Anarajapoora	MR. A. NICHOLL	343
A Dagoba at Kandy	From a Photograph	345
Ruins of the Brazen Palace	By MR. A. NICHOLL	357
The Alu Wihara	MR. A. NICHOLL	375
The fortified Rock of Sigiri	MR. A. NICHOLL	392
Coin of Queen Leela-Wattee		412
Coin showing the *Trisula*		461
Hook-money		463

Digitized by Google

		Page
Ancient and Modern Tom-tom Beaters	From the JOINVILLE MSS.	471
A Column from Anarajapoora		479
Sacred Goose from the Burmese Standard		485
Hansa, from the old Palace at Kandy		487
Honeysuckle Ornament	From FERGUSSON'S *Handbook of Architecture*	491
Egyptian Yoke and Singhalese Pingo		497
Veddah drawing the Bow with his Foot	By MR. R. MACDOWALL	499
Method of Writing with a Stile	MR. R. MACDOWALL	513
The "Comboy," as worn by both Sexes	MR. A. FAIRFIELD	612

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NOTICE

TO

THE THIRD EDITION.

The call for a third edition on the same day that the second was announced for publication, and within less than two months from the appearance of the first, has furnished a gratifying assurance of the interest which the public are disposed to take in the subject of the present work.

Thus encouraged, I have felt it my duty to make several alterations in the present impression, amongst the most important of which is the insertion of a Chapter on the doctrines of Buddhism as it developes itself in Ceylon.[1] In the historical sections I had already given an account of its introduction by Mahindo, and of the establishments founded by successive sovereigns for its preservation and diffusion. To render the narrative complete, it was felt desirable to insert an abstract of the peculiar tenets of the Buddhists; and this want it has been my object to supply. The sketch, it will be borne in mind, is confined to the principal features of what has been denominated "*Southern Buddhism*" amongst the Singhalese; as distinguished from "*Northern Buddhism*" in Nepal, Thibet, and China.[2] The latter has been largely illustrated by the labours

[1] See Part IV., c. xi.
[2] Max Müller, *History of Sanskrit Literature*, p. 262.

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of Mr. B. H. Hodgson and the toilsome researches of M. Csoma of Körrös in Transylvania; and the minutest details of the doctrines and ceremonies of the former have been unfolded in the elaborate an l comprehensive collections of Mr. Spence Hardy.[1] From materials discovered by these and other earnest inquirers, Buddhism in its general aspect has been ably delineated in the dissertations of Burnouf[2] and Saint Hilaire[3], and in the commentaries of Remusat[4], Stanislas Julien[5], Foucaux[6], Lassen[7], and Weber.[8] The portion thus added to the present edition has been to a great extent taken from a former work of mine on the local superstitions of Ceylon, and the "*Introduction and Progress of Christianity*" there; and as the section relating to Buddhism had the advantage, previous to publication, of being submitted to the Rev. Mr. Gogerly, the most accomplished Pali scholar, as well as the most erudite student of Buddhistical literature in the island, I submit it with confidence as an accurate summary of the distinctive views of the Singhalese on the leading doctrines of their national faith.

A writer in the *Saturday Review*[9], in alluding to the passage in which I have sought to establish the identity of the ancient Tarshish with the modern Point de Galle[10], admits the force of the coincidence adduced, that the Hebrew terms for "ivory, apes, and peacocks"[11] (the articles imported in the ships of Solomon) are identical with the Tamil names, by which

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[1] *Eastern Monachism*, an account of the origin, laws, discipline, sacred writings, mysterious rites, religious ceremonies, and present circumstances of the Order of Mendicants, founded by Gotoma Budha. 8vo. Lond. 1850; and *A Manual of Budhism in its Modern Development*. 8vo. Lond. 1853.

[2] Burnouf, *Introduction à l'Histoire du Bouddhisme Indien*. 4to. Paris. 1845; and translation of the *Lotus de la bonne Loi*.

[3] J. Barthelemy Saint-Hilaire, *Le Bouddha et sa Religion*. 8vo. Paris. 1860.

[4] Introduction and Notes to the *Foë Koué Ki* of Fa Hian.

[5] Life and travels of Hiouen Thsang.

[6] Translation of *Lalitavistâra* by M. Ph. Ed. Foucaux.

[7] Author of the *Indische Alterthumskunde*; &c.

[8] Author of the *Indische Studien*; &c.

[9] Novemb. 19, 1859, p. 612.

[10] *See* Vol. II. Pt. vii., c. i. p. 102.

[11] 1 *Kings*, x. 22.

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these objects are known in Ceylon to the present day; and, to strengthen my argument on this point, he adds that, "these terms were so entirely foreign and alien from the common Hebrew language as to have driven the Ptolemaist authors of the Septuagint version into a blunder, by which the ivory, apes, and peacocks come out as '*hewn and carven stones.*'" The circumstance adverted to had not escaped my notice; but I forebore to avail myself of it; for, although the fact is accurately stated by the reviewer, so far as regards the Vatican MS., in which the translators have slurred over the passage and converted "*ibha, kapi,* and *tukeyim*" into "λίθων τορευτῶν καὶ πελεκητῶν" (literally, "stones hammered and carved in relief"); still, in the other great MS. of the Septuagint, the *Codex Alexandrinus*, which is of equal antiquity, the passage is correctly rendered by "ὀδοντῶν ἐλεφαντίνων καὶ πιθήκων καὶ ταώνων." The editor of the Aldine edition[1] compromised the matter by inserting "the ivory and apes," and excluding the "peacocks," in order to introduce the Vatican reading of "stones."[2] I have not compared the Complutensian and other later versions.

The Rev. Mr. Cureton, of the British Museum, who, at my request, collated the passage in the Chaldee and Syriac versions, assures me that in both, the terms in question bear the closest resemblance to the Tamil words found in the Hebrew; and that in each and all of them these are of foreign importation.

J. EMERSON TENNENT.

London:
November 28th, 1859.

[1] Venice, 1518.
[2] Καὶ ὀδοντῶν ἐλεφαντινῶν καὶ πιθήκων καὶ λίθων. ΒΑΣΙΛ. ΤΡΙΤΗ. x. 22.

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TO

THE FIRST EDITION.

THERE is no island in the world, Great Britain itself not excepted, that has attracted the attention of authors in so many distant ages and so many different countries as Ceylon. There is no nation in ancient or modern times possessed of a language and a literature, the writers of which have not at some time made it their theme. Its aspect, its religion, its antiquities, and productions, have been described as well by the classic Greeks, as by those of the Lower Empire; by the Romans; by the writers of China, Burmah, India, and Kashmir; by the geographers of Arabia and Persia; by the mediæval voyagers of Italy and France; by the annalists of Portugal and Spain; by the merchant adventurers of Holland, and by the travellers and topographers of Great Britain.

But amidst this wealth of materials as to the island, and its vicissitudes in early times, there is an absolute dearth of information regarding its state and progress during more recent periods, and its actual condition at the present day.

I was made sensible of this want, on the occasion of my nomination, in 1845, to an office in con-

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nection with the government of Ceylon. I found abundant details as to the capture of the maritime provinces from the Dutch in 1795, in the narrative of Captain PERCIVAL[1], an officer who had served in the expedition; and the efforts to organise the first system of administration are amply described by CORDINER[2], Chaplain to the Forces; by Lord VALENTIA[3], who was then travelling in the East; and by ANTHONY BERTOLACCI[4], who acted as auditor-general to the first governor, Mr. North, afterwards Earl of Guilford. The story of the capture of Kandy in 1815 has been related by an anonymous eye-witness under the pseudonyme of PHILALETHES[5], and by MARSHALL in his *Historical Sketch* of the conquest.[6] An admirable description of the interior of the island, as it presented itself some forty years ago, was furnished by Dr. DAVY[7], a brother of the eminent philosopher, who was employed on the medical staff in Ceylon, from 1816 till 1820.

Here the long series of writers is broken, just at the commencement of a period the most important and interesting in the history of the island. The interior, which for centuries had been mysteriously hidden from the Portuguese and Dutch[8], was suddenly opened to

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[1] *An Account of the Island of Ceylon, &c.*, by Capt. R. PERCIVAL. 4to London, 1805.

[2] *A Description of Ceylon, &c.*, by the Rev. JAMES CORDINER, A.M. 2 vols. 4to. London, 1807.

[3] *Voyages and Travels to India, Ceylon, and the Red Sea*, by Lord Viscount VALENTIA. 3 vols. 4to. London. 1809

[4] *A View of the Agricultural, Commercial, and Financial Interests of Ceylon, &c.*, by A. BERTOLACCI, Esq. London, 1817.

[5] *A History of Ceylon from the earliest Period to the Year* MDCCCXV, by PHILALETHES, A.M. 4to. Lond. 1817. The author is believed to have been the Rev. G. Bisset.

[6] HENRY MARSHALL, F.R.S.E., &c. went to Ceylon as assistant surgeon of the 89th regiment, in 1806, and from 1816 till 1821 was the senior medical officer of the Kandyan provinces.

[7] *An Account of the Interior of Ceylon, &c.*, by JOHN DAVY, M.D. 4to. London, 1821.

[8] VALENTYN, in his great work on the Dutch possessions in India, *Oud*

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British enterprise in 1815. The lofty zone, from behind whose barrier of hills the kings of Kandy had looked down upon and defied the arms of three successive European nations, was at last rendered accessible by the grandest mountain road in India; and in the north of the island, the ruins of ancient cities, and the stupendous monuments of an early civilisation, were discovered in the solitudes of the great central forests. English merchants embarked in the renowned trade in cinnamon, which we had wrested from the Dutch; and British capitalists introduced the cultivation of coffee into the previously inaccessible highlands. Changes of equal magnitude contributed to alter the social position of the natives; domestic slavery was extinguished; compulsory labour, previously exacted from the free races, was abolished; and new laws under a charter of justice superseded the arbitrary rule of the native chiefs. In the course of less than half a century, the aspect of the country became changed, the condition of the people was submitted to new influences; and the time arrived to note the effects of this civil revolution.

But on searching for books such as I expected to find, recording the phenomena consequent on these domestic and political events, I was disappointed to discover that they were few in number and generally meagre in information. Major FORBES, who in 1826 and for some years afterwards held a civil appointment in the Kandyan country, published an interesting account of his observations[1]; and his work derives value from the atten-

en Nieuw Oost-Indien, alludes more than once with regret to the ignorance in which his countrymen were kept as to the interior of Ceylon, concerning which their only information was obtained through fugitives and spies. (Vol. v. ch. ii. p. 35; ch. xv. p. 205.)

[1] *Eleven Years in Ceylon, &c.*, by Major FORBES. 2 vols. 8vo. London, 1840.

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tion which the author had paid to the ancient records of the island, whose contents were then undergoing investigation by the erudite and indefatigable TURNOUR.[1]

In 1843 Mr. BENNETT, a retired civil servant of the colony, who had studied some branches of its natural history, and especially to its ichthyology, embodied his experiences in a volume entitled "*Ceylon and its Capabilities*," containing a mass of information, somewhat defective in arrangement. These and a number of minor publications, chiefly descriptive of sporting tours in search of elephants and deer, with incidental notices of the sublime scenery and majestic ruins of the island, were the only modern works that treated of Ceylon; but no one of them sufficed to furnish a connected view of the colony at the present day, contrasting its former condition with the state to which it has attained under the government of Great Britain.

On arriving in Ceylon and entering on my official functions, this absence of local knowledge entailed frequent inconvenience. In my tours throughout the interior, I found ancient monuments, apparently defying decay, of which no one could tell the date or the founder; and temples and cities in ruins, whose destroyers were equally unknown. There were vast structures of public utility, on which the prosperity of the country had at one time been dependent; artificial lakes, with their conduits and canals for irrigation; whose condition rendered it interesting to ascertain the period of their formation, and the causes of their abandonment; but to every inquiry of this nature, there was the same unvarying reply: that information regarding them might possibly be found in the *Mahawanso*, or in some

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[1] See Vol. I. Part III. ch. iii. p. 312.

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other of the native chronicles; but that few had ever read them, and none had succeeded in reproducing them for popular instruction.

A still more serious embarrassment arose from the want of authorities to throw light on questions that were sometimes the subject of administrative deliberation: native customs which no available materials sufficed to illustrate; and native claims, often serious in their importance, the consideration of which was obstructed by a similar dearth of authentic data. With a view to executive measures, I was frequently desirous of consulting the records of the two European governments, by whom the island had been administered for 300 years before the arrival of the British; their experience might have served as a guide, and even their failures would have pointed out errors to be avoided; but here, again, I had to encounter disappointment; in answer to my inquiries, I was assured that *the records, both of the Portuguese and Dutch, had long since disappeared from the archives of the colony.*

Their loss, whilst in our custody, is the more remarkable, considering the value which was attached to them by our predecessors. The Dutch, on the conquest of Ceylon in the seventeenth century, seized the official accounts and papers of the Portuguese; and a memoir is preserved by VALENTYN, in which the Governor, Van Goens, on handing over the command to his successor in 1663, enjoins on him the study of these important documents, coupled with an expression of anxiety for their careful preservation.[1]

The British, on the capture of Colombo in 1796, were equally solicitous to obtain possession of the re-

[1] VALENTYN, *Oud en Nieuw Oost-Indien, &c.*, ch. xiii. p. 174.

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cords of the Dutch Government. By Art. XIV. of the capitulation they were required to be "faithfully delivered over;" and, by Art. XI., all "surveys of the island and its coasts" were required to be surrendered to the captors.[1] But, strange to say, the almost entire of these interesting and important papers appear to have been lost; not a trace of the Portuguese records, so far as I could discover, remains at Colombo; and if any vestige of those of the Dutch be still extant, they have probably become illegible from decay and the ravages of the white ants.[2]

But the loss is not utterly irreparable; duplicates of the Dutch correspondence during their possession of Ceylon are carefully preserved at Amsterdam; and within the last few years the Trustees of the British Museum purchased from the library of the late Lord Stuart de Rothesay the Diplomatic Correspondence and Papers of SEBASTIAÕ JOZÉ CARVALHO E MELLO (Portuguese Ambassador at London and Vienna, and subsequently known as the Marquis de Pombal), from 1738 to 1747, including sixty volumes relating to the history of the Portuguese possessions in India and Brazil during the 16th, 17th, and 18th centuries. Amongst the latter are forty volumes of despatches relative to India entitled *Collecçam Authentica de todas as Leys, Regimentos, Alvarás e mais ordens que se expediram para a India,*

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[1] Amongst a valuable collection of documents presented to the Royal Asiatic Society of London, by the late Sir Alexander Johnston, formerly Chief Justice of Ceylon, there is a volume of Dutch surveys of the Island, containing important maps of the coast and its harbours, and plans of the great works for irrigation in the northern and eastern provinces.

[2] *Note to the second edition.*—Since the first edition was published, I have been told by a late officer of the Ceylon Government, that many years ago, what remained of the Dutch records were removed from the record-room of the Colonial Office to the cutcherry of the government agent of the western province: where some of them may still be found.

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desde o establecimento destas conquístas; Ordenáda por proviram de 28 *de Marco de* 1754.[1] These contain the despatches to and from the successive Captains-General and Governors of Ceylon, so that, in part at least, the replacement of the records lost in the colony may be effected by transcription.

Meanwhile in their absence I had no other resource than the narratives of the Dutch and Portuguese historians, chiefly VALENTYN, DE BARROS, and DE COUTO, who have preserved in two languages the least familiar in Europe, chronicles of their respective governments, which, so far as I am aware, have never been republished in any translation.

The present volumes contain no detailed notice of the *Buddhist faith* as it exists in Ceylon, of the *Brahmanical rites*, or of the other religious superstitions of the island. These I have already described in my history of *Christianity in Ceylon.*[2] The materials for that work were originally designed to form a portion of the present one; but having expanded to too great dimensions to be made merely subsidiary, I formed them into a separate treatise. Along with them I have incorporated facts illustrative of the national character of the Singhalese under the conjoint influences of their ancestral superstitions and the partial enlightenment of education and gospel truth.

Respecting the *Physical Geography* and *Natural History* of the colony, I found an equal want of reliable information; and every work that even touched on the

[1] MSS. Brit. Mus. No. 20,861 to 20,900.

[2] *Christianity in Ceylon: its Introduction and Progress under the Portuguese, the Dutch, the British, and American Missions; with an Historical Sketch of the Brahmanical and Buddhist Superstitions*, by Sir JAMES EMERSON TENNENT. London, Murray, 1850.

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subject was pervaded by the misapprehension which I have collected evidence to correct, that Ceylon is but a fragment of the great Indian continent dissevered by some local convulsion; and that the zoology and botany of the island are identical with those of the mainland.[1]

Thus for almost every particular and fact, whether physical or historical, I have been to a great extent thrown on my own researches; and obliged to seek for information in original sources, and in French and English versions of Oriental authorities. The results of my investigations are embodied in the following pages; and it only remains for me to express, in terms however inadequate, my obligations to the literary and scientific friends by whose aid I have been enabled to pursue my inquiries.

Amongst these my first acknowledgments are due to Dr. Templeton, of the Army Medical Staff, for his cordial assistance in numerous departments; but above all in relation to the physical geography and natural history of the island. Here his scientific knowledge, successfully cultivated during a residence of nearly twelve years in Ceylon, and his intimate familiarity with its zoology and productions, rendered his co-operation invaluable;—and these sections abound with evidences of the liberal extent to which his stores of information have been generously imparted. To him and to Dr. Cameron, of the Army Medical Staff, I am indebted for many valuable facts and observations on tropical health and disease, embodied in the chapter on "*Climate.*"

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[1] It may seem presumptuous in me to question the accuracy of Dr. Davy's opinion on this point (see his *Account of the Interior of Ceylon, &c.*, ch. iii. p. 78), but the grounds on which I venture to do so are stated, Vol. I. pp. 7, 27, 160, 178, 208, &c.

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Sir RODERICK I. MURCHISON (without committing himself as to the controversial portions of the chapter on the *Geology* and *Mineralogy* of Ceylon) has done me the favour to offer some valuable suggestions, and to express his opinion as to the general accuracy of the whole.

Although a feature so characteristic as that of its *Vegetation* could not possibly be omitted in a work professing to give an account of Ceylon, I had neither the space nor the qualifications necessary to produce a systematic sketch of the Botany of the island. I could only attempt to describe it as it exhibits itself to an unscientific spectator; and the notices that I have given are confined to such of the more remarkable plants as cannot fail to arrest the attention of a stranger. In illustration of these, I have had the advantage of copious communications from WILLIAM FERGUSON, Esq., a gentleman attached to the Survey Department of the Civil Service in Ceylon, whose opportunities for observation in all parts of the island have enabled him to cultivate with signal success his taste for botanical pursuits. And I have been permitted to submit the portion of my work which refers to this subject to the revision of the highest living authority on Indian botany, Dr. J. D. HOOKER, of Kew.

Regarding the *fauna* of Ceylon, little has been published in any collective form, with the exception of a volume by Dr. KELAART entitled *Prodromus Faunæ Zeilanicæ*; several valuable papers by Mr. EDGAR L. LAYARD in the *Annals and Magazine of Natural History* for 1852 and 1853; and some very imperfect lists appended to PRIDHAM's compiled account of the

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island.[1] KNOX, in the charming narrative of his captivity, published in the reign of Charles II., has devoted a chapter to the animals of Ceylon, and Dr. DAVY has described the principal reptiles: but with these exceptions the subject is almost untouched in works relating to the colony. Yet a more than ordinary interest attaches to the inquiry, since Ceylon, instead of presenting, as is generally assumed, an identity between its *fauna* and that of Southern India, exhibits a remarkable diversity of type, taken in connection with the limited area over which they are distributed. The island, in fact, may be regarded as the centre of a geographical circle, possessing within itself forms, whose allied species radiate far into the temperate regions of the north, as well as into Africa, Australia, and the isles of the Eastern Archipelago.

In the chapters that I have devoted to its elucidation, I have endeavoured to interest others in the subject, by describing my own observations and impressions, with fidelity, and with as much accuracy as may be expected from a person possessing, as I do, no greater knowledge of zoology and the other physical sciences than is ordinarily possessed by any educated gentleman. It was my good fortune, however, in my journies to have the companionship of friends familiar with many branches of natural science: the late Dr. GARDNER, Mr. EDGAR L. LAYARD, an accomplished zoologist, Dr. TEMPLETON, and others; and I was thus enabled

[1] *An Historical, Political, and Statistical Account of Ceylon and its Dependencies*, by C. PRIDHAM, Esq. 2 vols. 8vo. London, 1849. The author was never, I believe, in Ceylon, but his book is a laborious condensation of the principal English works relating to it. Its value would have been greatly increased had Mr. Pridham accompanied his excerpts by references to the respective authorities.

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to collect on the spot many interesting facts relative to the structure and habits of the numerous tribes of animals. These, chastened by the corrections of my fellow-travellers, and established by the examination of collections made in the colony, and by subsequent comparison with specimens contained in museums at home, I have ventured to submit as faithful outlines of the *fauna* of Ceylon.

The sections descriptive of the several classes are accompanied by lists, prepared with the assistance of scientific friends, showing the extent to which each particular branch had been investigated by naturalists, up to the period of my departure from Ceylon at the close of 1849. These, besides their inherent interest, will, I trust, stimulate others to engage in the same pursuits; by exhibiting the chasms, which it still remains for future industry and research to fill up;—and the study of the zoology of Ceylon may thus serve as a preparative for that of Continental India, embracing, as the former does, much that is common to both, as well as possessing within itself a fauna peculiar to the island, that will amply repay more extended scrutiny.

From these lists have been excluded all species regarding the authenticity of which reasonable doubts could be entertained[1], and of some of them, a very few have been printed in *italics*, in order to denote the desirability of comparing them more minutely with well determined specimens in the great national depo-

[1] An exception occurs in the list of shells, prepared by Mr. Sylvanus Hanley, in which some whose localities are doubtful have been admitted for reasons adduced. (See Vol. I. p. 234.)

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sitories before finally incorporating them with the Singhalese catalogues.

In the labour of collecting and verifying the facts embodied in these sections, I cannot too warmly express my thanks for the aid I have received from gentlemen interested in similar pursuits in Ceylon: from Dr. KELAART and Mr. EDGAR L. LAYARD, as well as from officers of the Ceylon Civil Service; the HON. GERALD C. TALBOT, Mr. C. R. BULLER, Mr. MERCER, Mr. MORRIS, Mr. WHITING, Major SKINNER, and Mr. MITFORD.

Before venturing to commit these chapters of my work to the press, I have had the advantage of having portions of them read by Professor HUXLEY, Mr. MOORE, of the East India House Museum; Mr. R. PATTERSON, F.R.S., author of the *Introduction to Zoology*, and by Mr. ADAM WHITE, of the British Museum; to each of whom I am exceedingly indebted for the care they have bestowed. In an especial degree I have to acknowledge the kindness of Dr. J. E. GRAY, F.R.S. for valuable additions and corrections in the list of the Ceylon Reptilia; and to Professor FARADAY for some notes on the nature and qualities of the "Serpent Stone,"[1] submitted to him. I have recorded in its proper place my obligations to Admiral FITZROY, for his most ingenious theory in elucidation of the phenomena of the *Tides* around Ceylon.[2]

The extent to which my observations on *the Elephant* have been carried, requires some explanation. The existing notices of this noble creature are chiefly devoted to its *habits* and *capabilities in captivity;* and very few works, with which I am acquainted, contain illustrations of its instincts and functions when wild in

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[1] See Vol. I. Part II. ch. iii. p. 199. [2] See Vol. II. Part VII. ch. i. p. 116.

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its native woods. Opportunities for observing the latter, and for collecting facts in connection with them, are abundant in Ceylon, and from the moment of my arrival, I profited by every occasion afforded to me for studying the elephant in a state of nature, and obtaining from hunters and natives correct information as to its œconomy and disposition. Anecdotes in connection with this subject, I received from some of the most experienced residents in the island; amongst others, Major Skinner, Captain Philip Payne Gallwey, Mr. Fairholme, Mr. Cripps, and Mr. Morris. Nor can I omit to express my acknowledgments to Professor Owen, of the British Museum, to whom this portion of my manuscript was submitted previous to its committal to the press.

In the *historical sections* of the work, I have been reluctantly compelled to devote a considerable space to a narrative deduced from the ancient Singhalese chronicles; into which I found it most difficult to infuse any popular interest. But the toil was not undertaken without a motive. The œconomics and hierarchical institutions of Buddhism as administered through successive dynasties, exercised so paramount an influence over the habits and occupations of the Singhalese people, that their impress remains indelible to the present day. The tenure of temple lands, the compulsory services of tenants, the extension of agriculture, and the whole system of co-operative cultivation, derived from this source organisation and development; and the origin and objects of these are only to be rendered intelligible by an inquiry into the events and times in which the system took its rise. In connection with this subject, I am indebted to the representatives of the late Mr.

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TURNOUR, of the Ceylon Civil Service, for access to his unpublished manuscripts; and to those portions of his correspondence with Prinsep, which relate to the researches of these two distinguished scholars regarding the Pali annals of Ceylon. I have also to acknowledge my obligations to M. JULES MOHL, the literary executor of M. E. BURNOUF, for the use of papers left by that eminent orientalist in illustration of the ancient geography of the island, as exhibited in the works of Pali and Sanskrit writers.

I have been signally assisted in my search for materials illustrative of the social and intellectual condition of the Singhalese nation, during the early ages of their history, by gentlemen in Ceylon, whose familiarity with the native languages and literature impart authority to their communications; by ERNEST DE SARAM WIJEYESEKERE KAROONARATNE, the Maha-Moodliar and First Interpreter to the Governor; and to Mr. DE ALWIS, the erudite translator of the *Sidath Sangara*. From the Rev. Mr. GOGERLY of the Wesleyan Mission, I have received expositions of Buddhist policy; and the Rev. R. SPENCE HARDY, author of the two most important modern works on the archæology of Buddhism[1], has done me the favour to examine the chapter on SINGHALESE *Literature*, and to enrich it by numerous suggestions and additions.

In like manner I have had the advantage of communicating with Mr. COOLEY (author of the *History of Maritime and Inland Discovery*) in relation to the *Mediæval History* of Ceylon, and the period embraced

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[1] *Oriental Monachism*, 8vo. London, 1850; and *A Manual of Buddhism*, 8vo. London, 1853.

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by the narrative of the Greek, Arabian, and Italian travellers, between the fifth and fifteenth centuries.

I have elsewhere recorded my obligations to Mr. Wylie, and to his colleague, Mr. Lockhart of Shanghae, for the materials of one of the most curious chapters of my work, that which treats of the knowledge of Ceylon possessed by the Chinese in the Middle Ages. This is a field which, so far as I know, is untouched by any previous writer on Ceylon. In the course of my inquiries, finding that Ceylon had been, from the remotest times, the point at which the merchant fleets from the Red Sea and the Persian Gulf met those from China and the Oriental Archipelago; thus effecting an exchange of merchandise between East and West; and discovering that the Arabian and Persian voyagers, on their return, had brought home copious accounts of the island, it occurred to me that the Chinese travellers during the same period had in all probability been equally observant and communicative, and that the results of their experience might be found in Chinese works of the Middle Ages. Acting on this conjecture, I addressed myself to a Chinese gentleman, Wang Tao Chung, who was then in England; and he, on his return to Shanghae, made known my wishes to Mr. Wylie. My anticipations were more than realised by Mr. Wylie's researches. I received in due course, extracts from upwards of twenty works by Chinese writers, between the fifth and fifteenth centuries, and the curious and interesting facts contained in them are embodied in the chapter devoted to that particular subject. In addition to these, the courtesy of M. Stanislas Julien, the eminent French Sinologue, has laid me under a similar obligation for access to unpublished passages relative to Ceylon,

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in his translation of the great work of Hiouen Thsang; descriptive of the Buddhist country of India in the seventh century.[1]

It is with pain that I advert to that portion of the section which treats of the British rule in Ceylon; in the course of which the discovery of the private correspondence of the first Governor, Mr. North, deposited along with the Wellesley Manuscripts, in the British Museum[2], has thrown an unexpected light over the fearful events of 1803, and the massacre of the English troops then in garrison at Kandy. Hitherto the honour of the British Government has been unimpeached in these dark transactions; and the slaughter of the troops has been uniformly denounced as an evidence of the treacherous and "tiger-like" spirit of the Kandyan people.[3] But it is not possible now to read the narrative of these events, as the motives and secret arrangements of the Governor with the treacherous Minister of the king are disclosed in the private letters of Mr. North to the Governor-general of India, without feeling that the sudden destruction of Major Davie's party, however revolting the remorseless butchery by which it was achieved, may have been but the consummation of a revenge provoked by the discovery of the treason concocted by the Adigar in confederacy with the representative of the British Crown. Nor is this construction weakened by the fact, that no immediate vengeance was exacted by the Governor in expiation of that fearful tragedy; and that the private letters of Mr. North to the Marquis of Wellesley contain avowals of

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[1] *Mémoires sur les Contrées Occidentales*, traduites du Sanscrit en Chinois, en l'an 648, par M. Stanislas Julien.

[2] Additional MSS., Brit. Mus., No. 13864, &c.

[3] De Quincey, *collected Works*, p. 14.

ineffectual efforts to hush up the affair, and to obtain a clumsy compromise by inducing the Kandyan king to make an admission of regret.

I am aware that there are passages in the following pages containing statements that occur more than once in the course of the work. But I found that in dealing with so many distinct subjects the same fact became sometimes an indispensable illustration of more than one topic; and hence repetition was unavoidable even at the risk of tautology.

I have also to apologise for variances in the spelling of proper names, both of places and individuals, occurring in different passages. In extenuation of this, I can only plead the difficulty of preserving uniformity in matters dependent upon mere sound, and unsettled by any recognised standard of orthography.

I have endeavoured in every instance to append references to other authors, in support of statements which I have drawn from previous writers; an arrangement rendered essential by the numerous instances in which errors, that nothing short of the original authorities can suffice to expose, have been reproduced and repeated by successive writers on Ceylon.

To whatever extent the preparation of this work may have fallen short of its conception, and whatever its demerits in execution and style, I am not without hope that it will still exhibit evidence that by perseverance and research I have laboured to render it worthy of the subject.

JAMES EMERSON TENNENT.

LONDON:
July 13*th*, 1859.

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NOTICE

TO

THE SECOND EDITION.

THE rapidity with which the first impression has been absorbed by the public, has so shortened the interval between its appearance and that of the present edition, that no sufficient time has been allowed for the discovery of errors or defects; and the work is re-issued almost as a corrected reprint.

In the interim, however, I have ascertained, that Ribeyro's "Historical Account of Ceylon," which it was heretofore supposed had never appeared in any other than the French version of the Abbé Le Grand, and in the English translation of the latter by Mr. Lee[1], was some years since printed for the first time in the original Portuguese, from the identical MS. presented by the author to Pedro II. in 1685. It was published in 1836 by the Academia Real das Sciencias of Lisbon, under the title of "*Fatalidade Historica da Ilha de Ceilão;*" and forms the Vth volume of the "*Colleção de Noticias para a Historia e Geografia das Nações Ultramarinas.*" A fac-simile from a curious map of the island as it was then known to the Portuguese, has been included in the present edition.[2]

Some difficulty having been expressed to me, in identifying the ancient names of places in India adverted to in the following pages; and mediæval charts of that country being rare, a map has been inserted in the present edition[3], to supply the want complained of.

The only other important change has been a considerable addition to the Index, which was felt to be essential for facilitating reference.

J. E. T.

[1] See Vol. II. Part VI. ch. i. p. 5, note. [2] *Ibid.* p. 6. [3] See Vol. I. p. 330.

LONDON:
November 1*st*, 1859.

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PART I.

PHYSICAL GEOGRAPHY.

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CHAPTER I.

PHYSICAL GEOGRAPHY. — GEOLOGY. — MINERALOGY. — GEMS, CLIMATE, ETC.

General Aspect. — Ceylon, from whatever direction it is approached, unfolds a scene of loveliness and grandeur unsurpassed, if it be rivalled, by any land in the universe. The traveller from Bengal, leaving behind the melancholy delta of the Ganges and the torrid coast of Coromandel; or the adventurer from Europe, recently inured to the sands of Egypt and the scorched headlands of Arabia, is alike entranced by the vision of beauty which expands before him as the island rises from the sea, its lofty mountains covered by luxuriant forests, and its shores, till they meet the ripple of the waves, bright with the foliage of perpetual spring.

The Brahmans designated it by the epithet of *Lanka*, "the resplendent," and in their dreamy rhapsodies extolled it as the region of mystery and sublimity[1]; the Buddhist poets gracefully apostrophised it as "a

[1] "Ils en ont fait une espèce de paradis, et se sont imaginé que des êtres d'une nature angélique les habitaient."—Albyrouni, *Traité des Ères, &c.;* Reinaud, *Géographie d'Aboulféda*, Introd. sec. iii. p. ccxxiv. The renown of Ceylon as it reached Europe in the seventeenth century is thus summed up by Purchas in *His Pilgrimage*, b. v. c. 18, p. 550:— "The heauens with their dewes, the ayre with a pleasant holesomenesse and fragrant freshnesse, the waters in their many riuers and fountaines, the earth diuersified in aspiring hills, lowly vales, equall and indifferent plaines, filled in her inward chambers with mettalls and jewells, in her outward court and vpper face stored with whole woods of the best cinnamon that the sunne seeth; besides fruits, oranges, leimons, &c. surmounting those of Spaine; fowles and beasts, both tame and wilde

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pearl upon the brow of India;" the Chinese knew it as the "island of jewels;" the Greeks as the "land of the hyacinth and the ruby;" the Mahometans, in the intensity of their delight, assigned it to the exiled parents of mankind as a new elysium to console them for the loss of Paradise; and the early navigators of Europe, as they returned dazzled with its gems, and laden with its costly spices, propagated the fable that far to seaward the very breeze that blew from it was redolent of perfume.[1] In later and less imaginative times, Ceylon has still maintained the renown of its attractions, and exhibits in all its varied charms "the highest conceivable development of Indian nature."[2]

Picturesque Outline.—The nucleus of its mountain masses consists of gneissic, granitic, and other crystalline

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(among which is their elephant honoured by a naturall acknowledgement of excellence of all other elephants in the world). These all have conspired and joined in common league to present vnto Zeilan the chiefe of worldly treasures and pleasures, with a long and healthfull life in the inhabitants to enjoye them. No marvell then, if sense and sensualitie haue heere stumbled on a paradise."

[1] The fable of the "spicy breezes" said to blow from Arabia and India, is as old as Ctesias; and is eagerly repeated by Pliny, lib. xii. c. 42. The Greeks borrowed the tale from the Hindus, who believe that the *Chandana* or sandal-wood imparts its odours to the winds; and their poets speak of the Malayan as the westerns did of the Sabæan breezes. But the allusion to such perfumed winds was a trope common to all the discoverers of unknown lands: the companions of Columbus ascribed them to the region of the Antilles; and Verrazani and Sir Walter Raleigh scented them off the coast of Carolina. Milton borrowed from Diodorus Siculus, lib. iii. c. 46, the statement that

"Far off at sea north-east winds blow
Sabæan odours from the spicy shore
Of Araby the Blest."
(*P. L.* iv. 163.)

Ariosto employs the same imaginative embellishment to describe the charms of Cyprus:

"Serpillo e persa e rose e gigli e croco
Spargon dall' odorifero terreno
Tanta suavità, ch' in mar sentire
La fa ogni vento che da terra spire."
(*Orl. Fur.* xviii. 138.)

That some aromatic smell is perceptible far to seaward, in the vicinity of certain tropical countries, is unquestionable; and in the instance of Cuba, an odour like that of violets, which is discernible two or three miles from land, when the wind is off the shore, has been traced by Poeppig to a species of *Tetracera*, a climbing plant which diffuses its odour during the night. But in the case of Ceylon, if the existence of such a perfume be not altogether imaginary, the fact has been falsified by identifying the alleged fragrance with cinnamon, the truth being that the cinnamon laurel, unless it be crushed, exhales no aroma whatever, and the peculiar odour of the spice is only perceptible after the bark has been separated and dried.

[2] Lassen, *Indische Alterthumskunde*, vol. i. p. 198.

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rocks, which in their resistless upheaval have rent the superincumbent strata, raising them into lofty pyramids and crags, or hurling them in gigantic fragments to the plains below. Time and decay are slow in their assaults on these towering precipices and splintered pinnacles; and from the absence of more perishable materials, there are few graceful sweeps along the higher chains or rolling downs in the lower ranges of the hills. Every bold elevation is crowned by battlemented cliffs, and flanked by chasms in which the shattered strata are seen as sharp and as rugged as if they had but recently undergone the grand convulsion that displaced them.

Foliage and Verdure.—The soil in these regions is consequently light and unremunerative, but the plentiful moisture arising from the interception of every passing vapour from the Indian Ocean and the Bay of Bengal, added to the intense warmth of the atmosphere, combine to force a vegetation so rich and luxuriant, that imagination can picture nothing more wondrous and charming; every level spot is enamelled with verdure, forests of never-fading bloom cover mountain and valley; flowers of the brightest hues grow in profusion over the plains, and delicate climbing plants, rooted in the shelving rocks, hang in huge festoons down the edge of every precipice.

Unlike the forests of Europe, in which the excess of some peculiar trees imparts a character of monotony and graveness to the outline and colouring, the forests of Ceylon are singularly attractive from the endless variety of their foliage, and the vivid contrast of their hues. The mountains, especially those looking towards the east and south, rise abruptly to prodigious and almost precipitous heights above the level plains; the rivers wind through woods below like threads of silver through green embroidery, till they are lost in a dim haze which conceals the far horizon; and through this a line of tremulous light marks where the sunbeams are glittering among the waves upon the distant shore.

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From age to age a scene so lovely has imparted a colouring of romance to the adventures of the seamen who, in the eagerness of commerce, swept round the shores of India, to bring back the pearls and precious stones, the cinnamon and odours, of Ceylon. The tales of the Arabians are fraught with the wonders of "Serendib;" and the mariners of the Persian Gulf have left a record of their delight in reaching the calm havens of the island, and reposing for months together in valleys where the waters of the sea were overshadowed by woods, and the gardens were blooming in perennial summer.[1]

Geographical Position. — Notwithstanding the fact that the Hindus, in their system of the universe, had given prominent importance to Ceylon, their first meridian, "the meridian of Lanka," being supposed to pass over the island, they propounded the most extravagant ideas, both as to its position and extent; expanding it to the proportions of a continent, and at the same time placing it a considerable distance south-east of India.[2]

The native Buddhist historians, unable to confirm the exaggerations of the Brahmans, and yet reluctant to detract from the epic renown of their country by disclaiming its stupendous dimensions, attempted to reconcile its actual extent with the fables of the eastern astronomers by imputing to the agency of earthquakes the submersion of vast regions by the sea.[3] But evidence is wanting to corroborate the asser-

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[1] Reinaud, *Relation des Voyages Arabes*, &c., *dans le neuvième siècle.* Paris, 1845, tom. ii. p. 129.

[2] For a condensed account of the dimensions and position attributed to Lanka, in the Mythic Astronomy of the Hindus, see Reinaud's *Introduction to Aboulféda*, sec. iii. p. ccxvii., and his *Mémoire sur l'Inde*, p. 342; Wilford's *Essay on the Sacred Isles of the West*, Asiat. Researches, vol. x. p. 140.

[3] Sir William Jones adopted the legendary opinion that Ceylon "formerly, perhaps, extended much farther to the west and south, so as to include Lanka or the equinoctial point of the Indian astronomers."—*Discourse on the Institution of a Society for inquiring into the History,*

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tion of such an occurrence, at least within the historic period; no record of it exists in the earliest writings of the Hindus, the Arabians, or Persians; who, had the tradition survived, would eagerly have chronicled a catastrophe so appalling.[1] Geologic analogy, so far as an inference is derivable from the formation of the adjoining coasts, both of India and Ceylon, is opposed to its probability; and not only plants, but animals, mammalia, birds, reptiles, and insects, exist in Ceylon, which are not to be found in the flora or fauna of the Indian continent.[2]

&c. of the Borderers, Mountaineers, and Islanders of Asia. —Works, vol. i. p. 120.

The Portuguese, on their arrival in Ceylon in the sixteenth century, found the natives fully impressed by the traditions of its former extent and partial submersion; and their belief in connection with it, will be found in the narratives and histories of De Barros and Diogo de Couto, from which they have been transferred, almost without abridgment, to the pages of Valentyn. The substance of the native legends will be found in the *Mahawanso*, c. xxii. p. 131; and *Rajavali*, p. 180, 190.

[1] The first disturbance of the coast by which Ceylon is alleged to have been severed from the main land is said by the Buddhists to have taken place B.C. 2387; a second commotion is ascribed to the age of Panduwaasa, B.C. 504; and the subsidence of the shore adjacent to Colombo is said to have taken place 200 years later, in the reign of Devenipiatissa, B.C. 306. The event is thus recorded in the *Rajavali*, one of the sacred books of Ceylon:—"In these days the sea was seven leagues from Kalany; but on account of what had been done to the teeroonansee (a priest who had been tortured by the king of Kalany), the gods who were charged with the conservation of Ceylon, became enraged and caused the sea to deluge the land; and as during the epoch called *duwapawrayaga* on account of the wickedness of Rawana, 25 palaces and 400,000 streets were all over-run by the sea, so now in this time of Tissa Raja, 100,000 large towns, 970 fishers' villages, and 400 villages inhabited by pearl fishers, making together eleven-twelfths of the territory of Kalany, were swallowed up by the sea."—*Rajavali*, vol. ii. p. 180, 190.

FORBES observes the coincidence that the legend of the rising of the sea in the age of Panduwaasa, 2378 B.C., very nearly concurs with the date assigned to the Deluge of Noah, 2348.—*Eleven Years in Ceylon*, vol. ii. p. 258. A tradition is also extant, that a submersion took place at a remote period on the east coast of Ceylon, whereby the island of Giridipo, which is mentioned in the first chapter of the *Mahawanso*, was engulfed, and the dangerous rocks called the Great and Little Basses are believed to be remnants of it.—*Mahawanso*, ch. i.

A *résumé* of the disquisitions which have appeared at various times as to the submersion of a part of Ceylon, will be found in a Memoir *sur la Géographie ancienne de Ceylan*, in the Journal Asiatique for January, 1857, 5th ser., vol. ix. p. 12; see also TURNOUR's *Introd. to the Mahawanso*, p. xxxiv.

[2] Some of the mammalia peculiar to the island are enumerated at p.

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Still in the infancy of geographical knowledge, and before Ceylon had been circumnavigated by Europeans, the mythical delusions of the Hindus were transmitted to the West, and the dimensions of the island were expanded till its southern extremity fell below the equator, and its breadth was prolonged till it touched alike on Africa and China.[1]

The Greeks who, after the Indian conquests of Alexander, brought back the earliest accounts of the East, repeated them without material diminution, and reported the island to be nearly twenty times its actual extent. Onesicritus, a pilot of the expedition, assigned to it a magnitude of 5000 stadia, equal to 500 geographical miles.[2] Eratosthenes attempted to fix its position, but went so widely astray that his first (that is his most southern) parallel passed through it and the "Cinnamon Land," the *Regio Cinnamomifera*, on the east coast of Africa.[3] He placed Ceylon at the distance of seven days' sail from the south of India, and he too assigned to its western coast an extent of 5000 stadia.[4] Both those authorities are quoted by Strabo, who says that the size of Taprobane was not less than that of Britain.[5]

160; birds found in Ceylon but not existing in India are alluded to at p. 178, and Dr. A. GÜNTHER, in a paper on the *Geographical Distribution of Reptiles*, in the *Mag. of Nat. Hist.* for March, 1859, says, "amongst these larger islands which are connected with the middle palæotropical region, none offers forms so different from the continent and other islands, as Ceylon. It might be considered the Madagascar of the Indian region. We not only find there peculiar genera and species, not again to be recognised in other parts; but even many of the common species exhibit such remarkable varieties, as to afford ample means for creating new nominal species," p. 280. The difference exhibited between the insects of Ceylon and those of Hindustan and the Dekkan are noticed by Mr. Walker in the present work, p. ii. ch. vi. vol. i. p. 270. See on this subject RITTER's *Erdkunde*, vol. iv. p. 17.

[1] GIBBON, ch. xxiv.

[2] STRABO, lib. 5. Artemidorus (100 B.C.), quoted by Stephanus of Byzantium, gives to Ceylon a length of 7000 stadia and a breadth of 500.

[3] STRABO, lib. ii. c. i. s. 14.

[4] The text of Strabo showing this measure makes it in some places 8000 (Strabo, lib. 5); and Pliny, quoting Eratosthenes, makes it 7000.

[5] STRABO, lib. ii. c. v. s. 32. Aristotle appears to have had more correct information, and says Ceylon was not so large as Britain.—*De Mundo*, ch. iii.

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The round numbers employed by those authors, and by the Greek geographers generally, who borrow from them, serve to show that their knowledge was merely collected from rumours; and that in all probability they were indebted for their information to the stories of Arabian or Hindu sailors returning from the Eastern seas.

Pliny learned from the Singhalese Ambassador who visited Rome in the reign of Claudius, that the breadth of Ceylon was 10,000 stadia from west to east; and Ptolemy fully developed the idea of his predecessors, that it lay opposite to the "Cinnamon Land," and assigned to it a length from north to south of nearly *fifteen degrees*, with a breadth of *eleven*, an exaggeration of the truth nearly twenty-fold.[1] Agathemerus copies Ptolemy; and the plain and sensible author of the "Periplus" (attributed to Arrian), still labouring with the delusion of the magnitude of Ceylon, makes it stretch almost to the opposite coast of Africa.[2]

These extravagant ideas of the magnitude of Ceylon were not entirely removed till many centuries later. The Arabian geographers, Massoudi, Edrisi, and Aboulfeda, had no accurate data by which to correct the errors of their Greek predecessors. The maps of the fourteenth and fifteenth centuries repeated their distortions[3]; and Marco Polo, in the fourteenth century, gives the island the usual exaggerated dimensions, yet informs us that it is now but one half the size it had been at a former period, the rest having been engulfed by the sea.[4]

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[1] PTOLEMY, lib. vii. c. 4.

[2] ARRIAN, *Periplus*, p. 35. Marcianus Heracleotra (whose Periplus has been reprinted by HUDSON, in the same collection from which I have made the reference to that of Arrian) gives to Ceylon a length of 9500 stadia with a breadth of 7500.—MAR. HER. p. 26.

[3] For an account of Ceylon as it is figured in the *Mappe-mondes* of the Middle Ages, see the *Essai* of the VICOMTE DE SANTAREM, *Sur la Cosmographie et Cartographie*, tom. iii. p. 335, &c.

[4] MARCO POLO, *e Viagge, &c.* p. 2, c. 148. A later authority than Marco Polo, PORCACCHI, in his *Isolario*, or "Description of the most celebrated Islands in the World," which was

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Such was the uncertainty thrown over the geography of the island by erroneous and conflicting accounts, that grave doubts came to be entertained of its identity, and from the fourteenth century, when the attention of Europe was re-directed to the nascent science of geography, down to the close of the seventeenth, it remained a question whether Ceylon or Sumatra was the Taprobane of the Greeks.[1]

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published at Venice in A.D. 1576, laments his inability even at that time to obtain any authentic information as to the boundaries and dimensions of Ceylon; and, relying on the representations of the Moors, who then carried on an active trade around its coasts, he describes it as lying under the equinoctial line, and possessing a circuit of 2100 miles. "Ella gira di circuito, secondo il calcole fatto da Mori, che modernamente l'hanno nauigato d'ogn' intorno due mila et cento miglia et corre maestro e sirocco; et per il mezo d'essa passa la linea equinottiale et è el principio del primo clima al terzo paralello." —*L' Isole piu Famose del Monde, descritte da* THOMASO PORCACCHI, lib. iii. p. 30.

[1] GIBBON states, that "Salmasius and most of the ancients confound the islands of Ceylon and Sumatra." —*Decl. and Fall.* ch. xl. This is a mistake. Saumaise was one of those who maintained a correct opinion; and, as regards the "ancients," they had very little knowledge of *Further India*, to which Sumatra belongs; but so long as Greek and Roman literature maintained their influence, no question was raised as to the identity of Ceylon and Taprobane. Even in the sixth century Cosmas Indicopleustes declares unhesitatingly that the Sielediva of the Indians was the Taprobane of the Greeks.

It was only on emerging from the general ignorance of the Middle Ages that the doubt was first promulgated. In the Catalan Map of A.D. 1375, entitled *Image du Monde*, Ceylon is omitted, and Taprobane is represented by Sumatra (MALTE BRUN, *Hist. de Geogr.*, vol. i. p. 318); in that of *Fra Mauro*, the Venetian Monk, A.D. 1458, Seylan is given, but *Taprobane* is added over *Sumatra*. A similar error appears in the *Mappe-monde*, by RUYCH, in the Ptolemy of A.D. 1508, and in the writings of the geographers of the sixteenth century, GEMMA FRISIUS, SEBASTIAN MUNSTER, RAMUSIO, JUL. SCALIGER, ORTELIUS, and MERCATOR. The same view was adopted by the Venetian NICOLA DA CONTI, in the first half of the fifteenth century, by the Florentine ANDREA CORSALI, MAXIMILIANUS TRANSYLVANUS, VARTHEMA, and PIGAFETTA. The chief cause of this perplexity was, no doubt, the difficulty of reconciling the actual position and size of Ceylon with the dimensions and position assigned to it by Strabo and Ptolemy, the latter of whom, by an error which is elsewhere explained, extended the boundary of the island far to the east of its actual site. But there was a large body of men who rejected the claim of Sumatra, and DE BARROS, SALMASIUS, BOCHART CLUVERIUS, CELLARIUS, ISAAC VOSSIUS and others, maintained the title of Ceylon. A *Mappe-monde* of A.D. 1417, preserved in the Pitti Palace at Florence compromises the dispute by designating Sumatra *Taprobane Major.* The controversy came to an end at the beginning of the eighteenth century, when the overpowering authority of DELISLE resolved the doubt, and confirmed the modern Ceylon as the Taprobane of antiquity. WILFORD, in the *Asiatic Researches* (vol. x. p. 140), still clung

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Latitude and Longitude.—There has hitherto been considerable uncertainty as to the position assigned to Ceylon in the various maps and geographical notices of the island: these have been corrected by more recent observations, and its true place has been ascertained to be between 5° 55′ and 9° 51′ north latitude, and 79° 41′ 40″ and 81° 54′ 50″ east longitude. Its extreme length from north to south, from Point Palmyra to Dondera Head, is 271½ miles; its greatest width 137½ miles, from Colombo on the west coast to Sangemankande on the east; and its area, including its dependent islands, 25,742 miles, or about one-sixth smaller than Ireland.[1]

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to the opposite opinion, and KANT undertook to prove that Taprobane was Madagascar.

[1] Down to a very recent period no British colony was more imperfectly surveyed and mapped than Ceylon; but since the recent publication by Arrowsmith of the great map by General Fraser, the reproach has been withdrawn, and no dependency of the Crown is more richly provided in this particular. In the map of Schneider, the Government engineer in 1813, two-thirds of the Kandyan Kingdom are a blank; and in that of the Society for the Diffusion of Knowledge, re-published so late as 1852, the rich districts of Neuera-kalawa and the Wanny, in which there are innumerable villages (and scarcely a hill), are marked as "*unknown mountainous region.*" But General Fraser, after the devotion of a lifetime to the labour, has produced a survey which, in extent and minuteness of detail, stands unrivalled. In this great work he had the co-operation of Major Skinner and of Captain Gallwey, and to these two gentlemen the public are indebted for the greater portion of the field-work and the trigonometrical operations. To judge of the difficulties which beset such an undertaking, it must be borne in mind that till very recently travelling in the interior of Ceylon was all but impracticable, in a country unopened even by bridle roads, across unbridged rivers, over mountains never trod by the foot of a European, and amidst precipices inaccessible to all but the most courageous and prudent. Add to this that the country is densely covered with forests and jungle, with trees a hundred feet high, from which here and there the branches had to be cleared to obtain a sight of the signal stations. The triangulation was carried on amidst privations, discomfort, and pestilence, which frequently prostrated the whole party, and forced their attendants to desert them rather than encounter such hardships and peril. The materials collected by the colleagues of General Fraser under these discouragements have been worked up by him with consummate skill and perseverance. The base line, five and a quarter miles in length, was measured in 1845 in the cinnamon plantation at Kaderani, to the north of Colombo, and its extremities are still marked by two towers, which it was necessary to raise to the height of one hundred feet, to enable them to be discerned above the surrounding forests. These it is to be hoped will be carefully kept from decay, as they may again be called into requisition. As regards the sea line, an admirable chart of the West coast,

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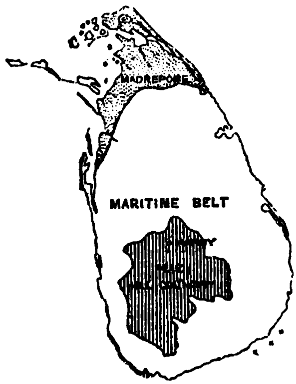
General Form.—In its general outline the island resembles a pear—and suggests to its admiring inhabitants the figure of those pearls which from their elongated form are suspended from the tapering end. When originally upheaved above the ocean its shape was in all probability nearly circular, with a prolongation in the direction of north-east. The mountain zone in the south, covering an area of about 4,212 miles[1], may then have formed the largest proportion of its entire area—and the belt of low lands, known as the Maritime Provinces, consist to a great extent of soil from the disintegration of the gneiss, detritus from the hills, alluvium carried down the rivers, and marine deposits gradually collected on the shore. But in addition to these, the land has for ages been slowly rising from the sea, and terraces abounding in marine shells imbedded in agglutinated sand occur in situations far above high-water mark. Immediately inland from Point de Galle, the surface soil rests on a stratum of decomposing coral; and sea shells are found at a considerable distance from the shore. Further north at Madampe, between Chilaw and Negombo, the shells of pearl oysters and other bivalves are turned up by the plough more than ten miles from the sea.



These recent formations present themselves in a still more striking form in the north of the island, the greater portion of which may be regarded as the conjoint pro-

from Adam's Bridge to Dondera Head, has been published by the East India Company from a survey in 1845. But information is sadly wanted as to the East and North, of which no accurate charts exist, except of a few unconnected points, such as the harbour of Trincomalie.

[1] This includes not only the lofty mountains suitable for the cultivation of coffee, but the lower ranges and spurs which connect them with the maritime plains.

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duction of the coral polypi, and the currents, which for the greater portion of the year set impetuously towards the south. Coming laden with alluvial matter collected along the coast of Coromandel, and meeting with obstacles south of Point Calimere, they have deposited their burthens on the coral reefs round Point Pedro; and these raised above the sea-level, and covered deeply by sand drifts, have formed the peninsula of Jaffna and the plains that trend westward till they unite with the narrow causeway of Adam's Bridge — itself raised by the same agencies, and annually added to by the influences of the tides and monsoons.[1]

On the north-west side of the island, where the currents are checked by the obstruction of Adam's Bridge, and still water prevails in the Gulf of Manaar, these deposits have been profusely heaped, and the low sandy plains have been proportionally extended; whilst on the south and east, where the current sweeps unimpeded along the coast, the line of the shore is bold and occasionally rocky.

This explanation of the accretion and rising of the land is somewhat opposed to the popular belief that Ceylon was torn from the main land of India[2] by a convulsion, during which the Gulf of Manaar and the narrow channel at Paumbam were formed by the submersion of the adjacent land. The two theories might be reconciled by supposing the sinking to have occurred at an early period, and to have been followed by the uprising still in progress. But on a closer examination of the structure and direction of the mountain

[1] The barrier known as Adam's Bridge, which obstructs the navigation of the channel between Ceylon and Ramnad, consists of several parallel ledges of conglomerate and sandstone, hard at the surface, and growing coarse and soft as it descends till it rests on a bank of sand, apparently accumulated by the influence of the currents at the change of the monsoons. See an *Essay* by Captain Stewart *on the Paumbem Passage*. Colombo, 1837.

[2] Lassen, *Indische Alterthumskunde*, vol. i. p. 193.

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system of Ceylon, it exhibits no traces of submersion. It seems erroneous to regard it as a prolongation of the Indian chains; it lies far to the east of the line formed by the Ghauts on either side of the peninsula, and any affinity which it exhibits is rather with the equatorial direction of the intersecting ranges of the Nilgherries and the Vindhya. In their geological elements there is, doubtless, a similarity between the southern extremity of India and the elevated portions of Ceylon; but there are also many important particulars in which their specific differences are irreconcilable with the conjecture of previous continuity. In Ceylon there is a marked preponderance of aqueous strata, which are comparatively rare in the vicinity of Cape Comorin; and whilst the rocks of the former are entirely destitute of organic remains[1]; fossils, both terrestrial and pelagic, have been found in the Eastern Ghauts, and sandstone, in some instances, overlays the primary rocks which compose them. The rich and black soil to the south of the Nilgherries presents a strong contrast to the red and sandy earth of the opposite coast; and both in the flora and fauna of the island there are exceptional peculiarities which suggest a distinction between it and the Indian continent.

Mountain System.—At whatever period the mountains of Ceylon may have been raised, the centre of maximum energy must have been in the vicinity of Adam's Peak, the group immediately surrounding

[1] At Cutchavelly, north of Trincomalie, there exists a bed of calcareous clay, in which shells and crustaceans are found in a semi-fossilised state; but they are all of recent species, principally *Macrophthalmus* and *Scylla*. The breccia at Jaffna contains recent shells, as does also the arenaceous strata on the western coast of Manaar and in the neighbourhood of Galle. The existence of the fossilised crustaceans in the north of Ceylon was known to the early Arabian navigators. Abou-zeyd describes them as, "Un animal de mer qui ressemble à l'écrevisse; quand cet animal sort de la mer, *il se convertit en pierre.*" See Reinaud, *Voyages faits par les Arabes*, vol. i. p. 21. The Arabs then, and the Chinese at the present day, use these petrifactions when powdered as a specific for diseases of the eye.

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which have thus acquired an elevation of from six to eight thousand feet above the sea.[1] The uplifting force seems to have been exerted from south-west to north-east; and although there is much confusion in many of the intersecting ridges, the lower ranges, especially those to the south and west of Adam's Peak, from Saffragam to Ambogammoa, manifest a remarkable tendency to run in parallel ridges in a direction from south-east to north-west.

Towards the north, on the contrary, the offsets of the mountain system, with the exception of those which stretch towards Trincomalie, radiate to short distances in various directions, and speedily sink down to the level of the plain. Detached hills of great altitude are rare, the most celebrated being that of Mihintala, which over-looks the sacred city of Anarajapoora: and Sigiri is the only example in Ceylon of those solitary acclivities, which form so remarkable a feature in the table-land of the Dekkan starting abruptly from the plain with scarped and perpendicular sides, and converted by the Indians into strongholds, accessible only by precipitous pathways, or steps hewn in the solid rock.

The crest of the Ceylon mountains is of stratified crystalline rock, especially gneiss, with extensive veins of quartz, and through this the granite has been every-where intruded, distorting the riven strata, and tilting them at all angles to the horizon. Hence at the abrupt terminations of some of the chains in the district of Saffragam, plutonic rocks are seen mingled with the dislocated gneiss. Basalt makes its appearance both at Galle and Trincomalie. In one place to the east

[1] The following are the heights of a few of the most remarkable places:—

Pedrotallagalla	8280	English feet.
Kirrigalpotta	7810	"
Totapella	7720	"
Adam's Peak	7420	"
Nammoone-Koolle	6740	"
Plain of Neuera-ellia	6210	"

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of Pettigalle-Kanda, the rocks have been broken up in such confusion as to resemble the effect of volcanic action —huge masses overhang each other like suddenly-cooled lava; and Dr. Gygax, a Swiss mineralogist, who was employed by the Government in 1847 to examine and report on the mineral resources of the district, stated, on his return, that having seen the volcanoes of the Azores, he found a "strange similarity at this spot to one of the semi-craters round the trachytic ridge of Seticidadas, in the island of St. Michael.[1]

Gneiss.—The great geological feature of the island is, however, the profusion of gneiss, and the various new forms arising from its disintegration. In the mountains, with the exception of occasional beds of dolomite, no more recent formations overlie it; from the period of its first upheaval, the gneiss has undergone no second submersion, and the soil which covers it in these lofty altitudes is formed almost entirely by its decay.

In the lower ranges of the hills, gigantic portions of gneiss rise conspicuously, so detached from the original chain and so rounded by the action of the atmosphere, aided by their concentric lamellation, that but for their prodigious dimensions, they might be regarded as boulders. Close under one of these cylindrical masses,

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[1] Beyond the very slightest symptoms of disturbance, earthquakes are unknown in Ceylon: and although its geology exhibits little evidence of volcanic action (with the exception of the basalt, which occasionally presents an appearance approaching to that of lava), there are some other incidents that seem to suggest the vicinity of fire; more particularly the occurrence of springs of high temperature, one at Badulla, one at Kitool, near Bintenne, another near Yavi Ooto, in the Veddah country, and a fourth at Cannea, near Trincomalie. I have heard of another near the Patipal Aar, South of Batticaloa. The water in each is so pure and free from salts that the natives make use of it for all domestic purposes. Dr. Davy adverts to another indication of volcanic agency in the sudden and profound depth of the noble harbour at Trincomalie, which even close by the beach is said to have been hitherto unfathomed.

The Spaniards believed Ceylon to be volcanic; and ARGENSOLA, in his *Conquista de las Malucas*, Madrid, 1609, says it produced liquid bitumen and sulphur:—"Fuentes de betùn liquido, y bolcanes de perpetuas llamas que arrojan entre las asperezas de la montaña losas de açufre."—Lib. v. p. 184. It is needless to say that this is altogether imaginary.

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600 feet in height, and upwards of three miles in length, the town of Kornegalle, one of the ancient capitals of the island, has been built; and the great temple of Dambool, the most remarkable Buddhist edifice in Ceylon, is constructed under the hollow edge of another, its gilded roof being formed by the inverted arch of the natural stone. The tendency of the gneiss to assume these concentric and almost circular forms has been taken advantage of for this purpose by the Singhalese priests, and some of their most venerated temples are to be found under the shadow of the overarching strata, to the imperishable nature of which the priests point as symbolical of the eternal endurance of their faith.[1]

Laterite or "Cabook."—A peculiarity, which is one of the first to strike a stranger who lands at Galle or Colombo, is the bright red colour of the streets and roads, contrasting vividly with the verdure of the trees, and the ubiquity of the fine red dust which penetrates every crevice and imparts its own tint to every neglected article. Natives resident in these localities are easily recognisable elsewhere, by the general hue of their dress. This is occasioned by the prevalence along the western coast of *laterite*, or, as the Singhalese call it, *cabook*, a product of disintegrated gneiss, which being subjected to detrition communicates its hue to the soil.[2]

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[1] The concentric lamellar strata of the gneiss sometimes extend with a radius so prolonged that slabs may be cut from them and used in substitution for beams of timber, and as such they are frequently employed in the construction of Buddhist temples. At Piagalla, on the road between Galle and Colombo, within about four miles of Caltura, there is a gneiss hill of this description on which a temple has been so erected. In this particular rock the garnets usually found in gneiss are replaced by rubies, and nothing can exceed the beauty of the hand-specimens procurable from a quarry close to the high road on the landward side; in which, however, the gems are in every case reduced to splinters.

[2] According to the *Mahawanso*, "Tamba-panni," one of those names by which Ceylon was anciently called, originated in an incident connected with the invasion of Wijayo, B.C. 543, whose followers, "exhausted by sea sickness and faint from weakness, sat down at the spot where they had landed out of the vessels, supporting themselves on the palms of their hands pressed to the ground, whence the name

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The transformation of gneiss into laterite in these localities has been attributed to the circumstance, that those sections of the rock which undergo transition exhibit grains of magnetic iron ore partially disseminated through them; and the phenomenon of the conversion has been explained not by recurrence to the ordinary conception of mere weathering, which is inadequate, but to the theory of catalytic action, regard being had to the peculiarity of magnetic iron when viewed in its chemical formula.[1] The oxide of iron thus produced communicates its colouring to the laterite, and in proportion as felspar and hornblende abound in the gneiss, the cabook assumes respectively a white or yellow hue. So ostensible is the series of mutations, that in ordinary excavations there is no difficulty in tracing a continuous connection without definite lines of demarcation between the soil and the laterite on the one hand, and the laterite and gneiss rock on the other.[2]

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of Tamba-pannyo, '*copper-palmed*,' from the colour of the soil. From this circumstance that wilderness obtained the name of Tamba-panni; and from the same cause also this renowned land became celebrated under that name."—TURNOUR's *Mahawanso*, ch. vi. p. 50. From Tambapanni came the Greek name for Ceylon, *Taprobane*. Mr. de Alwis has corrected an error in this passage of Mr. Turnour's translation; the word in the original, which he took for *Tamba-panniyo*, or "copper-palmed," being in reality *tamba-vanna*, or "copper-coloured." Colonel Forbes questions the accuracy of this derivation, and attributes the name to the *tamana* trees; from the abundance of which he says many villages in Ceylon, as well as a district in southern India, have been similarly called. (*Eleven Years in Ceylon*, vol. i. p. 10.) I have not succeeded in discovering what tree is designated by this name, nor does it occur in MOON's *List of Ceylon Plants*. On the southern coast of India a river, which flows from the ghats to the sea, passing Tinnevelly, is called Tambapanni. Tambapanni, as the designation of Ceylon, occurs in the inscription on the rock of Girnar in Guzerat, deciphered by Prinsep, containing an edict by Asoka relative to the medical administration of India for the relief both of man and beast. (*Asiat. Soc. Journ. Beng.* vol. vii. p. 158.)

[1] From a paper read to the Royal Physical Society of Edinburgh by the Rev. J. G. Macvicar, D.D.

[2] From a paper on the Geology of Ceylon, by Dr. Gardner, in the Appendix to Lee's translation of RIBEYRO's *History of Ceylon*, p. 206. The earliest and one of the ablest essays on the geological system and mineralogy of Ceylon will be found in DAVY's *Account of the Interior of Ceylon*, London, 1821. It has, however, been corrected and enlarged by recent investigators.

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The tertiary rocks which form such remarkable features in the geology of other countries are almost unknown in Ceylon; and the "clay-slate, silurian, old red sandstone, carboniferous, new red sandstone, oolitic, and cretaceous systems" have not as yet been recognised in any part of the island.[1] Crystalline limestone in some places overlies the gneiss, and is worked for œconomical purposes in the mountain districts where it occurs.[2]

Along the western coast, from Point-de-Galle to Chilaw, breccia is found near the shores, from the agglutination of corallines and shells mixed with sand, and the disintegrated particles of gneiss. These beds present an appearance very closely resembling a similar rock, in which human remains have been found imbedded, at the north-east of Guadaloupe, now in the British Museum.[3] Incorporated with them there are minute fragments of sapphires, rubies, and tourmaline, showing that the sand of which the breccia is composed has been washed down by the rivers from the mountain zone.

Northern Provinces.—*Coral Formation.*—But the principal scene of the most recent formations is the extreme north of the island, with the adjoining peninsula of Jaffna. Here the coral rocks abound far above high-water mark, and extend across the island where the land has been gradually upraised, from the eastern to the western shore. The fortifications of Jaffna were built by the Dutch, from blocks of breccia quarried far from the sea, and still exhibit, in their worn surface, the outline of the shells and corallines of which they mainly consist. The roads, in the absence of more solid substances, are metalled with the same material; as the only other rock which occurs is a loose description of

[1] Dr. Gardner.

[2] In the maritime provinces lime for building is obtained by burning the coral and madrepore, which for this purpose is industriously collected by the fishermen during the intervals when the wind is off shore.

[3] Dr. Gardner.

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conglomerate, similar to that at Adam's Bridge and Manaar.

The phenomenon of the gradual upheaval of these strata is sufficiently attested by the position in which they appear, and their altitude above the sea; but, in close contiguity with them, an equally striking evidence presents itself in the fact that, at various points of the western coast, between the island of Manaar and Karativoe, the natives, in addition to fishing for chank shells[1] in the sea, dig them up in large quantities from beneath the soil on the adjacent shores, in which they are deeply imbedded[2], the land having since been upraised.

The sand, which covers a vast extent of the peninsula of Jaffna, and in which the coco-nut and Palmyra-palm grow freely, has been carried by the currents from the coast of India, and either flung upon the northern beach in the winter months, or driven into the lake during the south-west monsoon, and thence washed on shore by the ripple, and distributed by the wind.

The arable soil of Jaffna is generally of a deep red colour, from the admixture of iron, and, being largely composed of lime from the comminuted coral, is susceptible of the highest cultivation, and produces crops of great luxuriance. This tillage is carried on exclusively by irrigation from innumerable wells, into which the water rises fresh through the madrepore and sand; there being no streams in the district, unless those percolations can be so called which make their way underground, and rise in the sands on the margin of the sea at low water.

Wells in the Coral Rock.—These phenomena occur at Jaffna, in consequence of the rocks being magnesian limestone and coral, overlying a bed of sand, and

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[1] *Turbinella rapa*, formerly known as *Voluta gravis*, used by the people of India to be sawn into bangles and anklets.

[2] In 1845 an antique iron anchor was found under the soil at the north-western point of Jaffna, of such size and weight as to show that it must have belonged to a ship of much greater tonnage than any which the depth of water would permit to navigate the channel at the present day.

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in some places, where the soil is light, the surface of the ground is a hollow arch, which resounds as if a horse's weight were sufficient to crush it inwards. This is strikingly perceptible in the vicinity of the remarkable well at Potoor[1], on the west side of the road leading from Jaffna to Point Pedro, where the surface of the surrounding country is only about fifteen feet above the sea-level. The well, however, is upwards of 140 feet in depth; the water fresh at the surface, brackish lower down, and intensely salt below. According to the universal belief of the inhabitants, it is an underground pool, which communicates with the sea by a subterranean channel bubbling out on the shore near Kangesentorre, about seven miles to the north-west.

A similar subterranean stream is said to conduct to the sea from another singular well near Tillipalli, in sinking which the workmen, at the depth of fourteen feet, came to the ubiquitous coral, the crust of which gave way, and showed a cavern below containing the water they were in search of, with a depth of more than thirty-three feet. It is remarkable that the well at Tillipalli preserves its depth at all seasons alike, uninfluenced by rains or drought; and a steam-engine erected at Potoor, with the intention of irrigating the surrounding lands, failed to lower it in any perceptible degree.

Other wells, especially some near the coast, maintain their level with such uniformity as to be inexhaustible at any season, even after a succession of years of drought—a fact from which it may fairly be inferred that their supply is chiefly derived by percolation from the sea.[2]

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[1] For the particulars of this singular well, see the Chap. on Jaffna, Vol. II.

[2] DARWIN, in his admirable account of the coral productions of the Pacific and Indian oceans, has propounded a theory as to the abundance of fresh water in the atolls and islands on coral reefs, furnished by wells which ebb and flow with the tides. Assuming it to be impossible to separate salt from sea water by filtration, he suggests that the porous coral rock being permeated by salt water, the rain which falls on the surface must sink to the level of the surrounding sea, "and must accumulate there, displacing an equal bulk of sea water —and as the portion of the latter in the lower part of the great sponge-like mass rises and falls with the

An idea of the general aspect of Ceylon will be formed from what has here been described. Nearly four parts of the island are undulating plains, slightly diversified

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tides, so will the fresh water near the surface."—*Naturalist's Journal*, ch. xx. But subsequent experiments have demonstrated that the idea of separating the salt by filtration is not altogether imaginary, as Darwin seems to have then supposed, and Mr. Witt, in a remarkable paper *On a peculiar power possessed by Porous Media of removing matters from solution in water*, has since succeeded in showing that "water containing considerable quantities of saline matter in solution may, by merely percolating through great masses of porous strata during long periods, be gradually deprived of its salts *to such an extent as probably to render even sea-water fresh*."—*Philos. Mag.*, 1856. Divesting the subject therefore of this difficulty, other doubts would appear to suggest themselves as to the applicability of Darwin's theory to coral formations in general. For instance, it might be supposed that rain falling on a substance already saturated with moisture, would flow off instead of sinking into it; and that being of less specific gravity than salt water, it would fail to "displace an equal bulk" of the latter. There are some extraordinary but well attested statements of a thin layer of fresh water being found on the surface of the sea, after heavy rains in the Bay of Bengal. (*Journ. Asiat. Soc. Beng.* vol. v. p. 239.) Besides, I fancy that in the majority of atolls and coral islands the quantity of rain which so small an area is calculated to intercept would be insufficient of itself to account for the extraordinary abundance of fresh water daily drawn from the wells. For instance, the superficial extent of each of the Laccadives is but two or three square miles, the surface soil resting on a crust of coral, beneath which is a stratum of sand; and yet on reaching the latter, fresh water flows in such profusion, that wells and large tanks for soaking coco-nut fibre are formed in any place by merely "breaking through the crust and taking out the sand."—*Madras Journal*, vol. xiv. It is curious that the abundant supply of water in these wells should have attracted the attention of the early navigators, and Cosmas Indicopleustes, writing in the sixth century, speaks of the numerous small islands off the coast of Taprobane, with abundance of fresh water and coconut palms, although these islands rest on a bed of sand. (*Cosmas Ind.* ed. Thevenot, vol. i. p. 3, 20.) It is remarkable that in the little island of Ramisseram, one of the chain which connects Adam's Bridge with the Indian continent, fresh water is found freely on sinking for it in the sand. But this is not the case in the adjacent island of Manaar, which participates in the geologic character of the interior of Ceylon. The fresh water in the Laccadive wells always fluctuates with the rise and fall of the tides. In some rare instances, as on the little island of Bitra, which is the smallest inhabited spot in the group, the water, though abundant, is brackish, but this is susceptible of an explanation quite consistent with the experiments of Mr. Witt, which require that the process of percolation shall be continued "during *long* periods and through *great masses of porous strata*;" Darwin equally concedes that to keep the rain fresh when banked in, as he assumes, by the sea, the mass of madrepore must be "sufficiently thick to prevent mechanical admixture; and where the land consists of loose blocks of coral with open interstices, the water, if a well be dug, is brackish." Conditions analogous to all these particularised, present themselves at Jaffna, and seem to indicate that the extent to which fresh water is found there, is directly connected with percolation from the sea. The quantity

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by offsets from the mountain system which entirely covers the remaining fifth. Every district, from the depths of the valleys to the summits of the highest hills, is clothed with perennial foliage; and even the sand-drifts, to the ripple on the sea line, are carpeted

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of rain which annually falls is less than in England, being but thirty inches; whilst the average heat is highest in Ceylon, and the evaporation great in proportion. Throughout the peninsula, I am informed by Mr. Byrne, the Government surveyor of the district, that as a general rule "*all the wells are below the sea level.*" It would be useless to sink them in the higher ground, where they could only catch surface water. The November rains fill them at once to the brim, but the water quickly subsides as the season becomes dry, and "*sinks to the uniform level, at which it remains fixed for the next nine or ten months*, unless when slightly affected by showers." "*No well below the sea level becomes dry of itself*," even in seasons of extreme and continued drought. But the contents do not vary with the tides, the rise of which is so trifling that the distance from the ocean, and the slowness of filtration, renders its fluctuations imperceptible.

On the other hand, the well of Potoor, the phenomena of which indicate its direct connection with the sea, by means of a fissure or a channel beneath the arch of magnesian limestone, rises and falls a few inches in the course of every twelve hours. Another well at Navokeiry, a short distance from it, does the same, whilst the well at Tillipalli is entirely unaffected as to its level by any rains, and exhibits no alteration of its depths on either monsoon. ADMIRAL FITZROY, in his *Narrative of the Surveying Voyages of the Adventure and Beagle*, the expedition to which Mr. Darwin was attached, adverts to the phenomenon in connection with the fresh water found in the Coral Islands, and the rise and fall of the wells, and the flow and ebb of the tide. He advances the theory propounded by Darwin of the retention of the river-water, which he says, "does not mix with the salt water which surrounds it except at the edges of the land. The flowing tide pushes on every side, the mixed soil being very porous, and causes the water to rise: when the tide falls, the fresh water sinks also. *A sponge full of fresh water placed gently in a basin of salt water, will not part with its contents for a length of time if left untouched*, and the water in the middle of the sponge will be found untainted by salt for many days: perhaps much longer if tried."—Vol. i. p. 365. In a perfectly motionless medium the experiment of the sponge may no doubt be successful to the extent mentioned by Admiral Fitzroy; and so the rain-water imbibed by a coral rock might for a length of time remain fresh where it came into no contact with the salt. But the disturbance caused by the tides, and the partial intermixture admitted by Admiral Fitzroy, must by reiterated occurrence tend in time to taint the fresh water which is affected by the movement: and this is demonstrable even by the test of the sponge; for I find that on charging one with coloured fluid, and immersing it in a vessel containing water perfectly pure, no intermixture takes place so long as the pure water is undisturbed; but on causing an artificial tide, by gradually withdrawing and as gradually replacing a portion of the surrounding contents of the basin, the tinted water in the sponge becomes displaced and disturbed, and in the course of a few ebbs and flows its escape is made manifest by the quantity of colour which it imparts to the surrounding fluid.

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with verdure, and sheltered from the sunbeams by the cool shadows of the palm groves.

SOIL.—But the soil, notwithstanding this wonderful display of spontaneous vegetation, is not responsive to systematic cultivation, and is but imperfectly adapted for maturing a constant succession of seeds and cereal productions.[1] Hence arose the disappointment which beset the earliest adventurers who opened plantations of coffee in the hills, on discovering that after the first rapid development of the plants, delicacy and languor ensued, which were only to be corrected by returning to the earth, in the form of manures, those elements with which it had originally been but sparingly supplied, and which were soon exhausted by the first experiments in cultivation.

Patenas.—The only spots hitherto found suitable for planting coffee, are those covered by the ancient forests of the mountain zone; and one of the most remarkable phenomena in the œconomic history of the island, is the fact that the grass lands on the same hills, closely adjoining the forests and separated from them by no visible line save the growth of the trees, although they seem to be identical in the nature of the soil, have hitherto proved to be utterly insusceptible of reclamation or culture by the coffee planter.[2] These verdant openings, to which the natives have given the name of *patenas*, generally occur about the middle elevation of the hills, the summits and the hollows being covered with the customary growth of timber trees, which also fringe the edges of the mountain streams that trickle down these park-like openings. The forest approaches boldly to the very edge of a "patena," not disappearing

[1] See a paper in the Journal of Agriculture, for March, 1857, Edin.: on *Tropical Cultivation and its Limits*, by Dr. MACVICAR.

[2] Since the above was written, attempts have been made, chiefly by natives, to plant coffee on patena land. The result is a conviction that the cultivation is practicable, by the use of manures from the beginning; whereas forest land is capable, for three or four years at least, of yielding coffee without any artificial enrichment of the soil.

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gradually or sinking into a growth of underwood, but stopping abruptly and at once, the tallest trees forming a fence around the avoided spot, as if they enclosed an area of solid stone. These sunny expanses vary in width from a few yards to many thousands of acres; in the lower ranges of the hills they are covered with tall lemon-grass (*Andropogon schœnanthus*), whose oppressive perfume and coarse texture, when full grown, render it distasteful to cattle, which will only crop the delicate braird that springs after the surface has been annually burnt by the Kandyans. Two stunted trees, alone, are seen to thrive in these extraordinary prairies, *Careya arborea*, and *Emblica officinalis*, and these only below an altitude of 4000 feet; above this, the lemon-grass is superseded by harder and more wiry species; but the earth is still the same, a mixture of decomposed quartz largely impregnated with oxide of iron, but wanting the phosphates and other salts which are essential to highly organised vegetation.[1] The extent of the patena land is enormous in Ceylon, amounting to millions of acres; and it is to be hoped that the complaints which have hitherto been made by the experimental cultivators of coffee in the Kandyan provinces may hereafter prove exaggerated, and that much that has been attributed to the poverty of the soil may eventually be traced to deficiency of skill on the part of the early planters.

The natives in the same lofty localities find no deficient returns in the crops of rice, which they raise in the ravines and hollows, into which the earth from above has been washed by the periodical rains; but the cultivation of rice is so entirely dependent on the

[1] Humboldt is disposed to ascribe the absence of trees in the vast grassy plains of South America, to "the destructive custom of setting fire to the woods, when the natives want to convert the soil into pasture: when during the lapse of centuries grasses and plants have covered the surface with a carpet, the seeds of trees can no longer germinate and fix themselves in the earth, although birds and winds carry them continually from the distant forests into the Savannahs."—*Narrative*, vol. i. ch. vi. p. 242.

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presence of water, that no inference can be fairly drawn as to the quality of the soil from the abundance of its harvest.

The fields on which rice is grown in these mountains form one of the most picturesque and beautiful objects in the country of the Kandyans. Selecting an angular recess where two hills converge, they construct a series of terraces, raised stage above stage, and retiring as they ascend along the slope of the acclivity, up which they are carried as high as the soil extends.[1] Each terrace is furnished with a low ledge in front, behind which the requisite depth of water is retained during the germination of the seed, and what is superfluous is permitted to trickle down to the one below it. In order to carry on this peculiar cultivation the streams are led along the level of the hills, often from a distance of many miles, with a skill and perseverance for which the natives of these mountains have attained a great renown.

In the lowlands to the south, the soil partakes of the character of the hills from whose detritus it is to a great extent formed. In it rice is the chief article produced, and for its cultivation the disintegrated laterite (*cabook*), when thoroughly irrigated, is sufficiently adapted. The seed time in the southern section of the island is dependent on the arrival of the rains in November and May, and hence the mountains and the maritime districts at their base enjoy two harvests in each year—the *Maha*, which is sown about July and August, and reaped in December and January, and the *Yalla*, which is sown in spring, and reaped from the 15th of July to the 20th September. But owing to the different description of seed sown in particular localities, and the extent to which they are

[1] The conversion of the land into these hanging farms is known in Ceylon as "assuedamizing," a term borrowed from the Kandyan vernacular, in which the word "assuedamé" implies the process above described.

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respectively affected by the rains, the times of sowing and harvest vary considerably on different sides of the island.[1]

In the north, where the influence of the monsoons is felt with less force and regularity, and where, to counteract their uncertainty, the rain is collected in reservoirs, a wider discretion is left to the husbandman in the choice of season for his operations.[2] Two crops of grain, however, are the utmost that is taken from the land, and in many instances only one. The soil near the coast is light and sandy, but in the great central districts of Neuera-kalawa and the Wanny, there is found in the midst of the forests a dark vegetable mould, in which in former times rice was abundantly grown by the aid of those prodigious artificial works for irrigation which still form one of the wonders of the island. Many of the tanks, though partially in ruins, cover an area from ten to fifteen miles in circumference. They are now generally broken and decayed; the waters which would fertilise a province are allowed to waste themselves in the sands, and hundreds of square miles capable of furnishing food for all the inhabitants of Ceylon are abandoned to solitude and malaria, whilst rice for the support of the non-agricultural population is annually imported from the opposite coast of India.

Talawas.—In these districts of the lowlands, especially on the eastern coast of the island, and in the country watered by the Mahawelli-ganga and the other great rivers which flow towards the Bay of Bengal and the magnificent estuary of Trincomalie, there are open glades which diversify the forest scenery somewhat

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[1] The reaping of other descriptions of grain besides rice occurs at various periods of the year according to the locality.

[2] This peculiarity of the north of Ceylon was noticed by the Chinese traveller FA HIAN, who visited the island in the fourth century, and says of the country around Anarajapoora: "L'ensemencement des champs est suivant la volonté des gens; il n'y a point de temps pour cela."—*Foë Kouë Ki*, p. 332.

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resembling the grassy patenas in the hills, but differing from them in the character of their soil and vegetation. These park-like meadows, or, as the natives call them, "talawas," vary in extent from one to a thousand acres. They are belted by the surrounding woods, and studded with groups of timber and sometimes with single trees of majestic dimensions. Through these pastures the deer troop in herds within gunshot, bounding into the nearest cover when disturbed.

Lower still and immediately adjoining the sea-coast, the broken forest gives place to brushwood, with here and there an assemblage of dwarf shrubs; but as far as the eye can reach, there is one vast level of impenetrable jungle, broken only by the long sweep of salt marshes which form lakes in the rainy season, but are dry between the monsoons, and crusted with crystals that glitter like snow in the sunshine.

On the western side of the island the rivers have formed broad alluvial plains, in which the Dutch attempted to grow sugar. The experiment has been often resumed since; but even here the soil is so defective, that the cost of artificially enriching it has hitherto been a serious obstruction to success commercially, although in one or two instances, plantations on a small scale have succeeded to a certain extent.

Metals. — The plutonic rocks of Ceylon are but slightly metalliferous, and hitherto their veins and deposits have been but imperfectly examined. The first successful survey attempted by the government was undertaken during the administration of Viscount Torrington, who, in 1847, commissioned Dr. Gygax to proceed to the hill district south of Adam's Peak, and furnish a report on its products. His investigations extended from Ratnapoora, in a south-eastward direction, to the mountains which overhang Bintenne, but the results obtained did not greatly enlarge the knowledge previously possessed. He established the exist-

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ence of *tin* in the alluvium along the base of the mountains to the eastward towards Edelgashena; but so circumstanced, owing to the flow of the Walleway river, that, without lowering its level, the metal could not be extracted with advantage. The position in which it occurs is similar to that in which tin ore presents itself in Saxony; and along with it, the natives, when searching for gems, discover garnets, corundum, white topazes, zircon, and tourmaline.

Gold is found in minute particles at Gettyhedra, and in the beds of the Maha Oya and other rivers flowing towards the west.[1] But the quantity hitherto discovered has been too trivial to reward the search. The early inhabitants of the island were not ignorant of its presence; but its occurrence on a memorable occasion, as well as that of silver and copper, is recorded in the Mahawanso as a miraculous manifestation, which signalised the founding of one of the most renowned shrines at the ancient capital.[2]

Nickel and *cobalt* appear in small quantities in Saffragam, and the latter, together with *rutile* (an oxide of titanium) and *wolfram*, might find a market in China for the colouring of porcelain.[3] *Tellurium*, another rare and valuable metal, hitherto found only in Transylvania and the Ural, has likewise been discovered in these

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[1] Ruanwellé, a fort about forty miles distant from Colombo, derives its name from the sands of the river which flows below it,—rang-welle, "golden sand." "Rang-galla," in the central province, is referable to the same root—the rock of gold.

[2] *Mahawanso,* ch. xxiii. p. 166, 167.

[3] The *Asiatic Annual Register* for 1799 contains the following:—

"*Extract from a letter from Colombo, dated 26th Oct.* 1798.

"A discovery has been lately made here of a very rich mine of *quicksilver*, about six miles from this place. The appearances are very promising, for a handful of the earth on the surface will, by being washed, produce the value of a rupee. A guard is set over it, and accounts sent express to the Madras Government."—P. 53. See also PERCEVAL's *Ceylon*, p. 539.

JOINVILLE, in a MS. essay on *The Geology of Ceylon*, now in the library of the East India Company, says that near Trincomalie there is "un sable noir, composé de détriments de trappe et de cristaux de fer, *dans lequel on trouve par le lavage beaucoup de mercure.*"

mountains. *Manganese* is abundant, and *Iron* occurs in the form of magnetic iron ore, titanite, chromate, yellow hydrated, per-oxide and iron pyrites. In most of these, however, the metal is scanty, and the ores of little comparative value, except for the extraction of manganese and chrome. "But there is another description of iron ore," says Dr. Gygax, in his official report to the Ceylon Government, "which is found in vast abundance, brown and compact, generally in the state of carbonate, though still blended with a little chrome, and often molybdena. It occurs in large masses and veins, one of which extends for a distance of fifteen miles; from it millions of tons might be smelted, and when found adjacent to fuel and water-carriage, it might be worked to a profit. The quality of the iron ore found in Ceylon is singularly fine; it is easily smelted, and so pure when reduced as to resemble silver. The rough ore produces from *thirty* to *seventy-five* per cent., and on an average fully *fifty*. The iron wrought from it requires no puddling, and, converted into steel, it cuts like a diamond. The metal could be laid down in Colombo for £6 per ton, even supposing the ore to be brought thither for smelting, and prepared with English coal; but *anthracite* being found upon the spot, it could be used in the proportion of three to one of the British coal; and the cost correspondingly reduced."

Remains of ancient furnaces are met with in all directions precisely similar to those still in use amongst the natives. The Singhalese obtain the ore they require without the trouble of mining; seeking a spot where the soil has been loosened by the latest rains, they break off a sufficient quantity, which, in less than three hours, they convert into iron by the simplest possible means. None of their furnaces are capable of smelting more than twenty pounds of ore, and yet this quantity yields from seven to ten pounds of good metal.

The *anthracite* alluded to by Dr. Gygax is found in

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the southern range of hills near Nambepane, in close proximity to rich veins of *plumbago*, which are largely worked in the same district, and the quantity of the latter annually exported from Ceylon exceeds two thousand tons. *Molybdena* is found in profusion dispersed through many rocks in Saffragam, and it occurs in the alluvium in grey scales, so nearly resembling plumbago as to be commonly mistaken for it. *Kaolin*, called by the natives *Kirimattie*, appears at Neurea-ellia at Hewahette, Kaduganawa, and in many of the higher ranges as well as in the low country near Colombo; its colour is so clear as to suit for the manufacture of porcelain[1]; but the difficulty and cost of carriage render it as yet unavailing for commerce, and the only use to which it has hitherto been applied is to serve for whitewash instead of lime.

Nitre has long been known to exist in Ceylon, where the localities in which it occurs are similar to those in Brazil. In Saffragam alone there are upwards of sixty caverns known to the natives, from which it may be extracted, and others exist in various parts of the island, where the abundance of wood to assist in its lixiviation would render that process easy and profitable. Yet so sparingly has this been hitherto attempted, that even for purposes of refrigeration, crude saltpetre is still imported from India.[2]

GEMS.—But the chief interest which attaches to the

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[1] The kaolin of Ceylon, according to an analysis in 1847, consists of—

Pure kaolin	70·0
Silica	26·0
Molybdena and iron oxide	4·0
	100·0

In the *Ming-she*, or history of the Ming dynasty, A.D. 1368—1643, by Chan-ting-yuh, "pottery-stone" is enumerated among the imports into China from Ceylon.—B. cccxxvi. p. 5.

[2] The mineralogy of Ceylon has hitherto undergone no scientific scrutiny, nor have its mineral productions been arranged in any systematic and comprehensive catalogue. Specimens are to be found in abundance in the hands of native dealers; but from indifference or caution they express their inability to afford adequate information as to their locality, their geological position, or even to show with sufficient certainty that they belong to the island. Dr. Gygax, as the results of some years spent in exploring different districts previous to

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mountains and rocks of this region, arises from the fact that they contain those mines of *precious stones* which from time immemorial have conferred renown on Ceylon. The ancients celebrated the gems as well as the pearls of "Taprobane;" the tales of mariners returning from their eastern expeditions supplied to the story-tellers of the Arabian Nights their fables of the jewels of "Serendib;" and the travellers of the Middle Ages, on returning to Europe, told of the "sapphires, topazes, amethysts, garnets, and other costly stones" of Ceylon, and of the ruby which belonged to

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1847, was enabled to furnish a list of but thirty-seven species, the site of which he had determined by personal inspection. These were:—

1. Rock crystal	Abundant.
2. Iron quartz	Saffragam.
3. Common quartz	Abundant.
4. Amethyst	Galle Back, Caltura.
5. Garnet	Abundant.
6. Cinnamon stone	Belligam.
7. Harmotome	St. Lucia, Colombo.
8. Hornblende	Abundant.
9. Hypersthene	Ditto.
10. Common corundum	Badulla.
11. Ruby	Ditto and Saffragam.
12. Chrysoberyl	Ratganga, North Saffragam.
13. Pleonaste	Badulla.
14. Zircon	Wallawey-ganga, Saffragam.
15. Mica	Abundant.
16. Adular	Patna Hills, North-east.
17. Common felspar	Abundant.
18. Green felspar	Kandy.
19. Albite	Melly Matté.
20. Chlorite	Kandy.
21. Pinite	Patna Hills.
22. Black tourmaline	Neuera-ellia.
23. Calcspar	Abundant.
24. Bitterspar	Ditto.
25. Apatite	Galle Back.
26. Fluorspar	Ditto.
27. Chiastolite	Mount Lavinia.
28. Iron pyrites	Peradenia.
29. Magnetic iron pyrites	Ditto, Rajawelle.
30. Brown iron ore	Abundant.
31. Spathose iron ore	Galle Back.
32. Manganese	Saffragam.
33. Molybden glance	Abundant.
34. Tin ore	Saffragam.
35. Arseniate of nickel	Ditto.
36. Plumbago	Morowa Corle.
37. Epistilbite	St. Lucia.

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the king of the island, "a span in length, without a flaw, and brilliant beyond description."[1]

The extent to which gems are still found is sufficient to account for the early traditions of their splendour and profusion; and fabulous as this story of the ruby of the Kandyan kings may be, the abundance of gems in Saffragam has given to the capital of the district the name of *Ratnapoora*, which means literally "the city of rubies."[2] They are not, however, confined to this quarter alone, but quantities are still found on the western plains between Adam's Peak and the sea, at Neuera-ellia, in Oovah, at Kandy, at Mattelle in the central province, and at Ruanwelli near Colombo, at Matura, and in the beds of the rivers eastwards towards the ancient Mahagam.

But the localities which chiefly supply the Ceylon gems are the alluvial plains at the foot of the stupendous hills of Saffragam, in which the detritus of the rocks has been carried down and intercepted by the slight elevations that rise at some distance from the base of the mountains. The most remarkable of these gem-bearing deposits is in the flat country around Ballangodde, south-east of Ratnapoora; but almost every valley in communication with the rocks of the higher ranges contains stones of more or less value, and the beds of the rivers flowing southward from the mountain chain are so rich in comminuted fragments of rubies, sapphires, and garnets[3], that their sands in

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[1] *Travels of* MARCO POLO, *a Venetian, in the Thirteenth Century*, Lond. 1818.

[2] In the vicinity of Ratnapoora there are to be obtained masses of quartz of the most delicate rose colour. Some pieces, which were brought to me in Colombo, were of extraordinary beauty; and I have reason to believe that it can be obtained in pieces large enough to be used as slabs for tables, or formed into vases and columns. I may observe that similar pieces are to be found in the south of Ireland, near Cork.

[3] Mr. BAKER, in a work entitled *The Rifle and the Hound in Ceylon*, thus describes the sands of the Manic Ganga, near the ruins of Mahagam, in the south-eastern extremity of the island: — "The sand was composed of mica, quartz, sapphire, ruby, and jacinth; but the large proportion of ruby sand was so extraordinary that it seemed to rival Sinbad's story of

some places are used by lapidaries in polishing the softer stones, and in sawing the elephants' grinders into plates. The cook of a government officer at Galle recently brought to him a ruby about the size of a small pea, which he had taken from the crop of a fowl.

Of late years considerable energy has been shown by those engaged in the search for gems; neglected districts have been explored, and new fields have been opened up at such places as Karangodde and Weraloopa, whence stones have been taken of unusual size and value.

It is not, however, in the recent strata of gravel, nor in those now in process of formation, that the natives search for gems. They penetrate these to the depth of from ten to twenty feet, in order to reach a lower deposit distinguished by the name of *Nellan*, in which the objects of their search are found. This is of so early a formation that it underlies the present beds of rivers, and is generally separated from them or from the superincumbent gravel by a hard crust (called *Kadua*), a few inches in thickness, and so consolidated as to have somewhat the appearance of laterite, or of sun-burnt brick. The nellan is for the most part horizontal, but occasionally it is raised into an incline as it approaches the base of the hills. It appears to have been deposited previous to the eruption of the basalt, on which in some places it reclines, and to have undergone some alteration from the contact. It consists of water-worn pebbles firmly imbedded in clay, and occasionally there occur large lumps of granite and gneiss, in the hollows under which, as well as in "pockets" in the clay (which from their shape the natives denominate

the vale of gems. The whole of this was valueless, but the appearance of the sand was very inviting, as the shallow stream in rippling over it magnified the tiny gems into stones of some magnitude. I passed an hour in vainly searching for a ruby worth collecting, but the largest did not exceed the size of a mustard seed."—Baker's *Rifle and Hound in Ceylon*, p. 181.

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"elephants' footsteps") gems are frequently found in groups as if washed in by the current.

The persons who devote themselves to this uncertain pursuit are chiefly Singhalese, and the season selected by them for "gemming" is between December and March, when the waters are low.[1] The poorer and least enterprising adventurers betake themselves to the beds of streams, but the most certain though the most costly course is to sink pits in the adjacent plains, which are consequently indented with such traces of recent explorers. The upper gravel is pierced, the covering crust is reached and broken through, and the nellan being shovelled into conical baskets and washed to free it from the sand, the residue is carefully searched for whatever rounded crystals and minute gems it may contain.

It is strongly characteristic of the want of energy in the Singhalese, that although for centuries those alluvial plains and watercourses have been searched without ceasing, no attempt appears to have been made to explore the rocks themselves, in the débris of which the gems have been brought down by the rivers. Dr. Gygax says: "I found at Hima Pohura, on the south-eastern decline of the Pettigalle-Kanda, about the middle of the descent, a stratum of grey granite containing, with iron pyrites and molybdena, innumerable rubies from one-tenth to a fourth of an inch in diameter, and of a fine rose colour, but split and falling to powder. It is not an isolated bed of minerals, but a regular stratum extending probably to the same depth and distance as the other granite formations. I followed it as far as was practicable for close examination, but every where in the lower part of the valley I found it so decomposed that the hammer sunk in the rock, and even bamboos were growing on it. On the higher ground near some

[1] A very interesting account of *Gems and Gem Searching*, by Mr. WM. STEWART, appeared in the *Colombo Observer* for June, 1855.

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small round hills which intercept it, I found the rubies changed into brown corundum. Upon the hills themselves the trace was lost, and instead of a stratum there was merely a wild chaos of blocks of yellow granite. I carefully examined all the minerals which this stratum contains—felspar, mica, and quartz molybdena, and iron pyrites,—and I found all similar to those I had previously got adhering to rough rubies offered for sale at Colombo. *I firmly believe that in such strata the rubies of Ceylon are originally found*, and that those in the white and blue clay at Ballangodde and Ratnapoora are but secondary deposits. I am further inclined to believe that these extend over the whole island, although often intercepted and changed in their direction by the rising of the yellow granite." It is highly probable that the finest rubies are to be found in them, perfect and unchanged by decomposition; and that they are to be obtained by opening a regular mine in the rock like the ruby mine of Badakshan in Bactria described by Sir Alexander Burnes. Dr. Gygax adds that having often received the minerals of this stratum with the crystals perfect, he has reason to believe that places are known to the natives where such mines might be opened with confidence of success.

Rubies both crystalline and amorphous are also found in a particular stratum of dolomite at Bullatotte and Badulla, in which there is a peculiar copper-coloured mica with metallic lustre. *Star rubies*, the "asteria" of Pliny (so called from their containing a movable six-rayed star), are to be had at Ratnapoora and for very trifling sums. The blue tinge which detracts from the value of the pure ruby, whose colour should resemble "pigeon's blood," is removed by the Singhalese, by enveloping the stone in the lime of a calcined shell and exposing it to a high heat. *Spinel* of extremely beautiful colours is found in the bed of the Mahawelli-ganga at Kandy, and from the locality it has obtained the name of *Candite*.

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It is strange that although the *sapphire* is found in all this region in greater quantity than the ruby, it has never yet been discovered in the original matrix, and the small fragments which sometimes occur in dolomite show that there it is but a deposit. From its exquisite colour and the size in which it is commonly found, it forms by far the most valuable gem of the island. A piece which was dug out of the alluvium within a few miles of Ratnapoora in 1853, was purchased by a Moor at Colombo, in whose hands it was valued at upwards of four thousand pounds.

The original site of the *oriental topaz* is equally unknown with that of the sapphire. The Singhalese rightly believe them to be the same stone only differing in colour, and crystals are said to be obtained with one portion yellow and the other blue.

Garnets of inferior quality are common in the gneiss, but finer ones are found in the hornblende rocks.

Cinnamon-stone (which is properly a variety of garnet) is so extremely abundant, that vast rocks containing it in profusion exist in many places, especially in the alluvium around Matura; and at Belligam, a few miles east from Point-de-Galle, a vast detached rock is so largely composed of cinnamon-stones that it is carried off in lumps for the purpose of extracting and polishing them.

The *Cat's-eye* is one of the jewels of which the Singhalese are especially proud, from a belief that it is only found in their island; but in this I apprehend they are misinformed, as specimens of equal merit have been brought from Quilon and Cochin on the southern coast of Hindostan. The cat's-eye is a greenish translucent quartz, and when cut *en cabochon* it presents a moving internal reflection which is ascribed to the presence of filaments of asbestos. Its perfection is estimated by the natives in proportion to the narrowness and sharpness of the ray and the pure olive-tint of the ground over which it plays.

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Amethysts are found in the gneiss, and some discoloured though beautiful specimens in syenite; they are too common to be highly esteemed. The "Matura Diamonds," which are largely used by the native jewellers, consist of zircon, found in the syenite not only uncoloured, but also of pink and yellow tints, the former passing for rubies.

But one of the prettiest though commonest gems in the island is the "Moon-stone," a variety of pearly adularia presenting chatoyant rays when simply polished. They are so abundant that the finest specimens may be bought for a few shillings. These, with *aqua marina*, a bad description of *opal rock crystal* in extremely large pieces, *tourmaline*, and a number of others of no great value, compose the list of native gems procurable in Ceylon.[1] Diamonds, emeralds, agates, carnelians, opal and turquois, when they are exhibited by the natives, have all been imported from India.

During the dynasty of the Kandyan sovereigns, the right of digging for gems was a royalty reserved jealously for the King; and the inhabitants of particular villages were employed in their search under the superintendence of hereditary officers, with the rank of "Mudianse." By the British Government the monopoly was early abolished as a source of revenue, and no license is now required by the jewel-hunters.

Great numbers of persons of the worst-regulated habits are constantly engaged in this exciting and precarious trade; and serious demoralisation is engendered amongst the villagers by the idle and dissolute adventurers who resort to Saffragam. Systematic industry suffers, and the cultivation of the land is frequently

[1] Caswini and some of the Arabian geographers assert that the diamond is found at Adam's Peak; but this is improbable, as there is no formation there resembling the *cascalhao* of Brazil or the diamond conglomerate of Golconda. If diamonds were offered for sale in Ceylon, in the time of the Arab navigators, they must have been brought thither from India. (*Journ. As. Soc. Beng.* xiii. 633.)

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neglected whilst its owners are absorbed in these speculative and tantalising occupations.

The products of their searches are disposed of to the Moors, who resort to Saffragam from the low country, carrying up cloth and salt, to be exchanged for gems and coffee. At the annual Buddhist festival of the Pera-hara, a jewel-fair is held at Ratnapoora, to which the purchasers resort from all parts of Ceylon. Of late years, however, the condition of the people in Saffragam has so much improved that it has become difficult to obtain the finest jewels, the wealthier natives preferring to retain them as investments: they part with them reluctantly, and only for gold, which they find equally convenient for concealment.[1]

The lapidaries who cut and polish the stones are chiefly Moors, but their tools are so primitive, and their skill so deficient, that a gem generally loses in value by having passed through their hands. The inferior kinds, such as cinnamon-stones, garnets, and tourmaline, are polished by ordinary artists at Kandy, Matura, and Galle; but the more expert lapidaries, who cut rubies and sapphires, reside chiefly at Caltura and Colombo.

As a general rule, the rarer gems are less costly in Europe than in Colombo. In London and Paris the quantities brought from all parts of the world are sufficient to establish something like a market value; but, in Ceylon, the supply is so uncertain that the price is always regulated at the moment by the rank and wealth of the purchaser. Strange to say, too, there is often an unwillingness even amongst the Moorish dealers to sell the rarest and finest specimens; those who are wealthy being anxious to retain them, and few but stones of secondary value are offered for sale. Besides, the Rajahs and native Princes of India, amongst whom the

[1] So eager is the appetite for hoarding in these hills, that eleven rupees (equal to twenty-two shillings) have frequently been given for a sovereign.

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passion for jewels is universal, are known to give such extravagant prices that the best are always sent to them from Ceylon.

From the Custom House returns it is impossible to form any calculation as to the value of the precious stones exported from the island. A portion only appears, even of those sent to England, the remainder being carried away by private parties. Of the total number found, one-fourth is probably purchased by the natives themselves, more than one-half is sent to the Continent of India, and the remainder represents the export to Europe. Computed in this way, the quantity of precious stones found in the island may be estimated at 10,000*l.* per annum.

RIVERS.—From the mountainous configuration of the country and the abundance of the rains, the rivers are large and numerous in the south of the island — ten of considerable magnitude flowing into the sea on the west coast, between Point-de-Galle and Manaar, and a still greater number, though inferior in volume, on the east. In the low country, where the heat is intense and evaporation proportionate, these derive little of their supply from springs ; and the passing showers which fall do scarcely more than replace the moisture drawn by the sun from the parched and thirsty soil.

Hence in the plains there are comparatively few rivulets or running streams ; the rivers there flow in almost solitary lines to the sea ; and the beds of their minor affluents serve only to conduct to them the torrents which descend at the change of each monsoon, their channels at other times being exhausted and dry. But in their course through the hills, and the broken ground at their base, they are supplied by numerous feeders, which convey to them the frequent showers that fall in these high altitudes. Hence their tracks are through some of the noblest scenery in the world ; rushing through ravines and glens, and falling over precipitous rocks in the depths of wooded valleys,

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they exhibit a succession of rapids, cataracts, and torrents, unsurpassed in magnificence and beauty. On reaching the plains, the boldness of their march and the graceful outline of their sweep are indicative of the little obstruction opposed by the sandy and porous soil through which they flow. Throughout their entire course dense forests shade their banks, and, as they approach the sea, tamarisks and over-arching mangroves mark where their waters mingle with the tide.

Of all the Ceylon rivers, the most important by far is the Mahawelli-ganga — the Ganges of Ptolemy — which, rising in the south near Adam's Peak, traverses more than one-third of the mountain zone[1], drains upwards of four thousand square miles, and flows into the sea by a number of branches, near the noble harbour of Trincomalie. The following table gives a comparative view of the magnitude of the rivers that rise in the hills, and of the extent of the low country traversed by each of them :—

	Embouchure.	Square Miles drained in Mountain Zone.	Square Miles drained in the low Country, about	Length of Course of the main Stream.
Mahawelli-ganga .	near Trincomalie .	1782	2300	134
Kirinde . . .	at Mahagan . .	34	300	62
Wellawey . . .	near Hambangtotte	263	500	69
Neivalle . . .	at Matura . . .	64	200	42
(Three Rivers) . .	near Tangalle . .	56	200	
Gindura . . .	near Galle . .	189	200	59
Kalu-oya . . .	at Caltura . . .	841	300	72
Kalany	Colombo . . .	692	200	84
The Kaymel or Maha-oya	near Negombo. .	253	200	68
Dederoo-oya . .	near Chilaw . .	38	700	70
		4212	5100	

In addition to these, there are a number of large rivers which belong entirely to the plains in the northern and south-eastern portions of the island, the principal

[1] See *ante*, p. 12, for a definition of what constitutes the "mountain zone" of Ceylon.

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of which are the Arive and the Moderegam, which flow into the Gulf of Manaar; the Kala-oya and the Kanda-lady, which empty themselves into the Bay of Calpentyn; the Maniek or Kattragam, and the Koombookgam, opposite to the Little Bass rocks; and the Naveloor, the Chadawak and Arookgam, south of Batticaloa. The extent of country drained by these latter streams is little short of thirteen thousand square miles.

Very few of the rivers of Ceylon are navigable, and these only by canoes and flat-bottomed paddy boats, which ascend some of the largest for short distances, till impeded by the rapids, occasioned by rocks in the lowest range of the hills. In this way the Niwalle at Matura can be ascended for about fifteen miles, as far as Wellehara; the Kalu-ganga can be traversed from Caltura to Ratnapoora; the Bentotte river for sixteen miles to Pittagalla; and the Kalany from Colombo to the foot of the mountains near Ambogammoa. The Mahawelli-ganga is navigable from Trincomalie to within a short distance of Kandy[1]; and many of the lesser streams, the Kirinde and Wellawey in the south, and the Kaymel, the Dedroo-oya, and the Aripo river on the west of the island, are used for short distances by boats.

All these streams are liable, during the fury of the monsoons, to be surcharged with rain till they overflow their banks, and spread in wide inundations over the level country. On the subsidence of these waters, the intense heat of the sun acting on the surface they leave deserted, produces a noxious and fatal malaria. Hence the rivers of Ceylon present the curious anomaly, that whilst the tanks and reservoirs of the interior diffuse a healthful coolness around, the running water of the rivers is prolific of fevers; and in some seasons so deadly is the pestilence that the Malabar coolies, as well

[1] For an account of the capabilities of the Mahawelli-ganga, as regards navigation, see Brooke's *Report*, *Roy. Geog. Journ.* vol. iii. p. 223, and *post*, Vol. II. p. 423.

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as the native peasantry, betake themselves to precipitate flight.[1]

None of the larger rivers have been bridged, except those which intersect the great high roads from Point-de-Galle to Colombo, and thence to Kandy. Near the sea this has been effected by timber platforms, sustained by piles sufficiently strong to withstand the force of the floods at the change of each monsoon. A bridge of boats connects each side of the Kalany, and on reaching the Mahawelli-ganga at Peradenia, one of the most picturesque structures on the island is a noble bridge of a single arch, 205 feet in span, chiefly constructed of satin-wood, and thrown across the river by General Fraser in 1832.

On reaching the margin of the sea, an appearance is presented by the outline of the coast, near the embouchures of the principal rivers, which is very remarkable. It is common to both sides of the island, though it has attained its greatest development on the east. In order to comprehend its formation, it is necessary to observe that Ceylon lies in the course of the ocean currents in the Bay of Bengal, which run north or south according to the prevalence of the monsoon, and with greater or less velocity in proportion to its force at particular periods.

CURRENT IN THE N. E. MONSOON.

In the beginning and during the strength of the north-east monsoon the current sets strongly along the coast of Coromandel to the southward, a portion of it frequently en-

[1] It has been remarked along the Mahawelli-ganga, a few miles from Kandy, that during the deadly season, after the subsidence of the rains, the jungle fever generally attacks one face of the hills through which it winds, leaving the opposite side entirely exempted, as if the poisonous vapour, being carried by the current of air, affected only those aspects against which it directly impinged.

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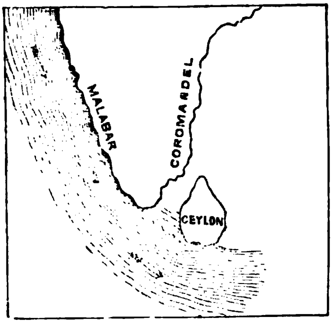
tering Palks Bay to the north of Ceylon; but the main stream keeping invariably to the east of the island, runs with a velocity of from one and a half to two miles an hour, and after passing the Great Bass, it keeps its course seaward. At other times, after the monsoon has spent its violence, the current is weak, and follows the line of the land to the westward as far as Point-de-Galle, or even to Colombo.



CURRENT IN THE S. W. MONSOON.

In the south-west monsoon the current changes its direction; and, although it flows steadily to the northward, its action is very irregular and unequal till it reaches the Coromandel coast, after passing Ceylon. This is accounted for by the obstruction opposed by the headlands of Ceylon, which so intercept the stream that the current, which might otherwise set into the Gulf of Manaar, takes a south-easterly direction by Galle and Donedra Head.[1]

There being no lakes in Ceylon[2], in the still waters of which the rivers might clear themselves of the earthy matter swept along in their rapid course from the hills, they arrive at the beach laden with sand and alluvium, and at their junction with the ocean being met transversely by the gulf-streams, the sand and soil with which they are laden, instead of being carried out to sea, are heaped up in bars along the shores, and these, being augmented by similar deposits held in

[1] For an account of the currents of Ceylon, see Horsburgh's *Directions for Sailing to and from the East Indies, &c.*, vol. i. p. 516, 536, 580; Keith Johnstone's *Physical Atlas*, plate xiii. p. 50.

[2] Pliny alludes to a lake in Ceylon of vast dimensions, but it is clear that his informants must have spoken of one of the huge tanks for the purpose of irrigation. Some of the *Mappe-mondes* of the Middle Ages place a lake in the middle of the island, with a city inhabited by astrologers; but they have merely reproduced the error of earlier geographers. (Santarem, *Cosmog.* tom. iii. p. 336.)

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suspension by the currents, soon extend to north and south, and force the rivers to flow behind them in search of a new outlet.

These formations once commenced, their growth proceeds with rapidity, more especially on the east side of the island; as the southern current in skirting the Coromandel coast brings with it quantities of sand, which it deposits, in tranquil weather, and this being carried by the wind is piled in heaps from Point Pedro to Hambangtotte. Hence at the latter point hills are formed of such height and dimensions, that it is often necessary to remove buildings out of their line of encroachment.[1]

At the mouths of the rivers the bars thus created generally follow the direction of the current, and the material deposited being dried and partially consolidated in the intervals between the tides, long embankments are gradually raised, behind which the rivers flow for considerable distances before entering the sea. Occasionally these embouchures become closed by the accumulations without, and the pent-up water assumes the appearance of a still canal, more or less broad according to the level of the beach, and extending for miles along the coast, between the mainland and the new formations. But when swollen by the rains, if not assisted by artificial outlets to escape, they burst new openings for themselves, and not unfrequently they leave their ancient channels converted into shallow lagoons without any visible exit. Examples of these forma-

"GOBBS" ON THE E. COAST.

[1] This is occasioned by the waste of the banks further north during the violence of the N. E. monsoon; and the sand, being carried south by the current, is intercepted by the headland at Hambangtotte and thrown up these hills as described.

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tions present themselves on the east side of Ceylon at Nilla-velle, Batticaloa, and a number of other places north and south of Trincomalie.

On the west coast embankments of this kind, although frequent are less conspicuous than on the east, owing chiefly to the comparative weakness of the current. For six months in the year during the north-east monsoon that side of the island is exempt from a current in any direction, and for the remaining six, the current from the south not only rarely affects the Gulf of Manaar, but as it flows out of the Indian Ocean it brings no earthy deposits. In addition to this, the surf during the south-west monsoon rolls with such turbulence on the level beach between Colombo and Point-de-Galle, as in a great degree to disperse the accumulations of sand brought down by the rivers, or heaped up by the tide, when the wind is off the land. Still, many of the rivers are thrown back by embankments, and after forming tortuous lakes flow for a long distance parallel to the shore, before finding an escape for their waters. Examples of this occur at Pantura, to the south of Colombo, and at Negombo, Chilaw, and elsewhere to the north of it.

"GOBBS" ON THE W. COAST.

In process of time these banks of sand[1] become

[1] In the voyages of *The Two Mahometans*, the unique MS. of which dates about A.D. 851, and is now in the Bibliothèque Royale at Paris, Abou-zeyd, one of its authors, describes the "Gobbs" of Ceylon—a word, he says, by which the natives designate the valleys deep and broad which open to the sea. "En face de cette île il y a de vastes *Gobb*, mot par lequel on désigne une vallée, quand elle est à la fois longue et large, et qu'elle débouche dans la mer. Les navigateurs emploient, pour traverser le *gobb* appelé 'Gobb de Serendib,' deux mois et même davantage, passant à travers des bois et des jardins, au milieu d'une température moyenne."—REINAUD, *Voyages faits par les Arabes*, vol. i. p. 129.

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covered with vegetation; herbaceous plants, shrubs, and finally trees peculiar to saline soils make their ap-

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A misapprehension of this passage has been admitted into the English version of the *Voyages of the two Mahometans* which is published in PINKERTON's *Collections of Voyages and Travels*, vol. iii.; the translator having treated gobb as a term applicable to valleys in general. "Ceylon," he says, "contains valleys of great length, which extend to the sea, and here travellers repair for two months or more, in one which is called Gobb Serendib, allured by the beauty of the scenery, chequered with groves and plains, water and meadows, and blessed by a balmy air. The valley opens to the sea, and is transcendently pleasant."—PINKERTON's *Voyages*, vol. vii. p. 218.

But a passage in Edrisi, while it agrees with the terms of Abou-zeyd, explains at the same time that these gobbs were not valleys converted into gardens, to which the seamen resorted for pleasure to spend two or three months, but the embouchures of rivers flowing between banks, covered with gardens and forests, into which mariners were accustomed to conduct their vessels for more secure navigation, and in which they were subjected to detention for the period stated. The passage is as follows in Jaubert's translation of Edrisi, tom. i. p. 73:—"Cette île (Serendib) dépend des terres de l'Inde; ainsi que les vallées (in orig. aghbab) par lesquelles se déchargent les rivières, et qu'on nomme 'Vallées de Serendib.' Les navires y mouillent, et les navigateurs y passent un mois ou deux dans l'abondance et dans les plaisirs."

It is observable that Ptolemy, in enumerating the ports and harbours of Ceylon, maintains a distinction between the ordinary bays, κόλπος, of which he specifies two corresponding to those of Colombo and Trincomalie, and the shallower indentations, λιμήν, of which he enumerates five, the positions of which go far to identify them with the remarkable estuaries or *gobbs*, on the eastern and western coast between Batticaloa and Calpentyn.

To the present day these latter gulfs are navigable for small craft. On the eastern side of the island one of them forms the harbour of Batticaloa, and on the western those of Chilaw and Negombo are bays of this class. Through the latter a continuous navigation has been completed by means of short connecting canals, and a traffic is maintained during the south-west monsoon, from Caltura to the north of Chilaw, a distance of upwards of eighty miles, by means of craft which navigate these shallow channels.

These narrow passages conform in every particular to the description given by Abou-zeyd and Edrisi: they run through a succession of woods and gardens; and as a leading wind is indispensable for their navigation, the period named by the Arabian geographers for their passage is perhaps not excessive during calms or adverse winds.

An article on the meaning of the word gobb will be found in the *Journal Asiatique* for September, 1844; but it does not exhibit clearly the very peculiar features of these openings. It is contained in an extract from the work on India of ALBYROUNI, a contemporary of Avicenna, who was born in the valley of the Indus.—"Un golfe (gobb) est comme une encoignure et un détour que fait la mer en pénétrant dans le continens: les navires n'y sont pas sans péril particulièrement à l'égard du flux et reflux."—*Extrait de l'ouvrage d'*ALBYROUNI *sur l'Inde; Fragmens Arabes et Persans, relatifs à l'Inde, recueillis par* M. REINAUD; *Journ. Asiat., Septembre et Octobre,* 1844, p. 261. In the Turkish nautical work of SIDI ALI CHELEBI, the *Mohit*, written about A. D. 1550, which contains directions for sailors navigating the eastern seas, the author alludes to the *gobbha's* on the coast of Ar-

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pearance in succession, and as these decay, their decomposition generates a sufficiency of soil to sustain continued vegetation.

The process of this conversion may be seen in all its stages at various points along the coast of Ceylon.

The margin of land nearest to the water is first taken possession of by a series of littoral plants, which apparently require a large quantity of salt to sustain their vegetation. These at times are intermixed with others, which, though found further inland, yet flourish in perfection on the shore. On the northern and north-western coasts the glass worts[1] and salt worts[2] are the first to appear on the newly raised banks, and being provided with penetrating roots, a breakwater is thus early secured, and the drier sand above becomes occupied with creeping plants which in their turn afford shelter to a third and erect class.

The Goat's-foot Ipomœa[3], which appears to encircle the world, abounds on these shores, covering the surface to the water's edge with its procumbent branches, which sending down roots from every joint serve to give the bank its first firmness, whilst the profusion of its purple-coloured flowers contrasts strikingly with its dark green foliage.

Along with the Ipomœa grow two species of beans[4] each endowed with a peculiar facility for reproduction, thus consolidating the sands into which they strike; and the moodu-gaeta-kola[5] (literally the "jointed sea-shore plant,") with pink flowers and thick succulent leaves.

Another plant which performs an important func-

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racan; and conscious that the term was local and not likely to be understood beyond those countries, he adds that "gobbha" means "*a gulf full of shallows, shoals, and breakers.*" See translation by Von Hammer, *Journ. Asiat. Soc. Beng.* v. 466.

[1] Salicornia Indica.

[2] Salsola Indica.

[3] Ipomœa pes-capræ.

[4] The Mooduawara (*Canavalia obtusifolia*), whose flowers have the fragrance of the sweet pea, and *Dolichos luteus*.

[5] Hydrophylax maritima.

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tion in the fertilisation of these arid formations, is the *Spinifex squarrosus*, the "water pink," as it is sometimes called by Europeans. The seeds of this plant are contained in a circular head, composed of a series of spine-like divisions, which radiate from the stalk in all directions, making the diameter of the whole about eight to nine inches. When the seeds are mature, and ready for dispersion, these heads become detached from the plant, and are carried by the wind with great velocity along the sands, over the surface of which they are impelled on their elastic spines. One of these balls may be followed by the eye for miles as it hurries along the level shore, dropping its seeds as it rolls, which speedily germinate and strike root where they fall. The globular heads are so buoyant as to float lightly on the water, and the uppermost spines acting as sails, they are thus carried across narrow estuaries to continue the process of embanking on newly-formed sand bars. Such an organisation irresistibly suggests the wonderful means ordained by Providence to spread this valuable plant along the barren beach to which no seed-devouring bird ever resorts; and even the unobservant natives, struck by its singular utility in resisting the encroachments of the sea, have recorded their admiration by conferring on it the name of *Maha-Rawana rœwula*,—"the great beard of Rawana or Rama."

The banks being thus ingeniously protected from the action of the air above, and of the water at their base, other herbaceous plants soon cover them in quick succession, and give the entire surface the first aspect of vegetation. A little retired above high water are to be found a species of *Aristolochia*[1], the Sayan[2], or *Choya*,

[1] *Aristolochia bracteata.* On the sands to the north of Ceylon there is also the *A. Indica*, which forms the food of the great red and white butterfly (*Papilio Hector*).

[2] *Hedyotis umbellata.* A very curious account of the Dutch policy in relation to Choya dye will be found in a paper *On the Vegetable Productions of Ceylon*, by W. C. ONDAATJIE, in the *Ceylon Calendar* for 1853. See also BERTOLACCI, B. iii. p. 270.

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the roots of which are the Indian Madder (in which, under the Dutch Government, some tribes in the Wanny paid their tribute); the gorgeous *Gloriosa superba*, the beautiful *Vistnu-karandi*[1] with its profusion of blue flowers, which remind one of the English "Forget-me-not," and the thickly-matted verdure of the *Hiramana-dœtta*[2], so well adapted for imparting consistency to the soil. In the next stage low shrubs make their appearance, their seeds being drifted by the waves and wind, and taking ready root wherever they happen to rest. The foremost of these are the Scævolas[3] and Screw Pines[4], which grow luxuriantly within the actual wash of the tide, while behind them rises a dense growth of peculiar plants, each distinguished by the Singhalese by the prefix of "Moodu," to indicate its partiality for the sea.[5]

Where the sand in the lagoons and estuaries is more or less mingled with the alluvium brought down by the rivers, there are plants of another class which are equally characteristic. Amongst these the Mangroves[6] take the first place in respect to their mass of vegetation; then follow the Belli-patta[7] and Suriya-gaha[8], with their large hibiscus-like flowers; the Tamarisks[9]; the Acanthus[10], with its beautiful blue petals and holly-like leaves; the Water Coco-nut[11]; the Ægiceras and Hernandia[12], with its sonorous fruits; while the dry sands above are taken possession of by the Acacias, *Salvadora Persica* (the true mus-

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[1] Evolvulus alsinoides.

[2] Lippia nodiflora.

[3] Scævola takkada and S. Kœnigii.

[4] Pandanus odoratissimus.

[5] *Moodu-kaduru* (*Ochrosia parviflora*); *Moodu-cobbe* (*Ornitrophe serrata*); *Moodu-murunga* (*Sophora tomentosa*), &c. &c. Amongst these marine shrubs the Nil-picha (*Guettarda speciosa*), with its white and delightfully fragrant flowers, is a conspicuous object on some parts of the sea-shore between Colombo and Point-de-Galle.

[6] Two species of *Rhizophora*, two of *Bruguiera*, and one of *Ceriops*.

[7] Paritium tilliaceum.

[8] Thespesia populnea.

[9] Tamarix Indica.

[10] Dilivaria ilicifolia.

[11] Nipa fruticans.

[12] Hernandia sonora.

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tard-tree of Scripture[1], which here attains a height of forty feet), Ixoras, and the numerous family of Cassias.

Lastly, after a sufficiency of earth has been formed by the decay of frequent successions of their less important predecessors, the ground becomes covered by trees of ampler magnitude, most of which are found upon the adjacent shores of the mainland — the Margoza[2], from whose seed the natives express a valuable oil; the Timbiri[3], with the glutinous nuts with which the fishermen "bark" their nets; the Cashu-nut[4]; the Palu[5], one of the most valuable timber trees of the Northern Provinces; and the Wood-apple[6], whose fruit is regarded by the Singhalese as a specific for dysentery.

But the most important fact connected with these recently formed portions of land, is their extraordinary suitability for the growth of the coco-nut, which requires the sea-air (and in Ceylon at least appears never to attain its full luxuriance when removed to any considerable distance from it)[7], and which, at the same time,

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[1] The identification of this tree with the mustard-tree alluded to by our Saviour is an interesting fact. The Greek term σίναπις, which occurs Matt. xiii. 31, and elsewhere, is the name given to *mustard;* for which the Arabic equivalent is *chardul* or *khardal,* and the Syriac *khardalo.* The same name is applied at the present day to a tree which grows freely in the neighbourhood of Jerusalem, and generally throughout Palestine; the seeds of which have an aromatic pungency, which enables them to be used instead of the ordinary mustard (*Sinapis nigra*); besides which, its structure presents all the essentials to sustain the illustration sought to be established in the parable, some of which are wanting or dubious in the common plant. It has a very small seed; it may be sown in a garden: it grows into an "herb," and eventually "becometh a tree; so that the birds of the air come and lodge in the branches thereof." With every allowance for the extremest development attainable by culture, it must be felt that the dimensions of the domestic *sinapis* scarcely justify the last illustration; besides which it is an annual, and cannot possibly be classed as a "tree." The khardal grows abundantly in Syria: it was found in Egypt by Sir Gardner Wilkinson; in Arabia by Bové; on the Indus by Sir Alexander Burns; and throughout the north-west of India it bears the name of kharjal. Combining all these facts, Dr. Royle, in an erudite paper, has shown demonstrative reasons for believing that the *Salvadora Persica,* the "kharjal" of Hindostan, is the "khardal" of Arabia, the "chardul" of the Talmud, and the "mustard-tree" of the parable.

[2] Azadirachta Indica.

[3] Diospyros glutinosa.

[4] Anacardium occidentale.

[5] Mimusops hexandra.

[6] Ægle marmelos.

[7] Coco-nuts are cultivated at moderate elevations in the mountain

requires a light and sandy soil, and the constant presence of water in large quantities. All these essentials are combined in the sea-belts here described, lying as they do between the ocean on the one side and the fresh-water lakes formed by the great rivers on the other, thus presenting every requisite of soil and surface. It is along a sand formation of this description, about forty miles long and from one to three miles broad, that thriving coco-nut plantations have been recently commenced at Batticaloa. At Calpentyn, on the western coast, a like formation has been taken advantage of for the same purpose. At Jaffna somewhat similar peculiarities of soil and locality have been seized on for this promising cultivation; and, generally, along the whole seaborde of Ceylon to the south and west, the shore for the breadth of one or two miles exhibits almost continuous groves of coco-nut palms.

Harbours.—With the exception of the estuaries above alluded to, chiefly in the northern section of the island, the outline of the coast is interrupted by few sinuosities. There are no extensive inlets, or bays, and only two harbours—that of *Point-de-Galle*, which, in addition to being incommodious and small, is obstructed by coral rocks, reefs of which have been upreared to the surface, and render the entrance critical to strange ships[1]; and the magnificent basin of Trincomalie, which, in extent, security, and beauty, is unsurpassed by any haven in the world.

Tides.—The variation of the tides is so slight that navigation is almost unaffected by it. The ordinary

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villages of the interior; but the fruit bears no comparison, in number, size, or weight, with that produced in the lowlands, and near the sea, on either side of the island.

[1] Owing to the obstructions at its entrance, Galle is extremely difficult of access in particular winds. In 1857 it was announced in the *Colombo Examiner* that "the fine ship the 'Black Eagle' was blown out of Galle Roads the other day, with the pilot on board, whilst the captain was temporarily engaged on shore; and as she was not able to beat in again, she made for Trincomalie, where she has been lying for a fortnight. Such an event is by no means unprecedented at Galle."—*Examiner*, 29 Sept. 1857.

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rise and fall is from 18 to 24 inches, with an increase of about a third at spring tides. High water is later on the eastern than on the western coast; occurring, on full and new moon, a little after eleven o'clock at Adam's Bridge, about 1 o'clock at Colombo, and 1.25 at Galle, whilst it attains its greatest elevation between 5 and 6 o'clock in the harbour of Trincomalie.

Red infusoria.—On both sides of the island (but most frequently at Colombo), during the south-west monsoon, a broad expanse of the sea assumes a red tinge, considerably brighter than brick-dust; and this is confined to a space so distinct that a line seems to separate it from the green water which flows on either side. Observing that the whole area changed its position without parting with any portion of its colouring, I had some of the water brought on shore, and, on examination with the microscope, it proved to be filled with *infusoria*, probably similar to those which have been noticed near the shores of South America, and whose abundance has imparted a name to the "Vermilion Sea" off the coast of California.

THE POPULATION OF CEYLON, of all races, was, in 1857, 1,697,975; but this was exclusive of the military and their families, both Europeans and Malays, which together amounted to 5,430; and also of aliens and other casual strangers, forming about 25,000 more.

The particulars are as follow:—

Provinces.	Whites.		Coloured.		Total.		Population to the sq. mile.
	Males.	Females.	Males.	Females.	Males.	Females.	
Western .	1,293	1,246	293,409	259,106	294,702	260,352	146·59
N. Western	21	11	100,807	96,386	100,828	96,397	59·93
Southern .	238	241	156,900	149,649	157,138	149,890	143·72
Eastern .	201	143	39,923	35,531	40,124	35,674	16 08
Northern .	387	362	153,062	148,678	153,449	149,040	55·85
Central . .	468	204	143,472	116,237	143,940	116,441	52·57
	2,608	2,207	887,573	805,587	890,181	807,794	69·73

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CHAP. II.

CLIMATE.—HEALTH AND DISEASE.

THE climate of Ceylon, from its physical configuration and insular detachment, contrasts favourably with that of the great Indian peninsula. Owing to the moderate dimensions of the island, the elevation of its mountains, the very short space during which the sun is passing over it[1] in his regression from or approach to the solstices, and its surrounding seas being nearly uniform in temperature, it is exempt from the extremes of heating and cooling to which the neighbouring continent of India is exposed. From the same causes it is subjected more uniformly to the genial influences of the trade winds that blow over the Indian Ocean and the Bay of Bengal.

The island is seldom visited by hurricanes[2], or swept by typhoons, and the breeze, unlike the hot and arid winds of Coromandel and the Dekkan, is always more or less refreshing. The range of the thermometer exhibits no violent changes, and never indicates a temperature insupportably high. The mean on an annual average scarcely exceeds 80° at Colombo, though in

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[1] In his approach to the northern solstice, the sun, having passed the equator on the 21st of March, reaches the south of Ceylon about the 5th of April, and ten days later is vertical over Point Pedro, the northern extremity of the island. On his return he is again over Point Pedro about the 27th of August, and passes southward over Dondera Head about the 7th of September.

[2] The exception to the exemption of Ceylon from hurricanes is the occasional occurrence of a cyclone extending its circle till the verge has sometimes touched Batticaloa, on the south-eastern extremity of the island, causing damage to vegetation and buildings. Such an event is, however, exceedingly rare. On the 7th of January, 1805, H.M.S. "Sheerness" and two others were driven on shore in a hurricane at Trincomalie.

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exceptional years it has risen to 86°. But at no period of the day are dangerous results to be apprehended from exposure to the sun; and except during parts of the months of March and April, there is no season when moderate exercise is not practicable and agreeable. For half the year, from October to May, the prevailing winds are from the north-east, and during the remaining months the south-west monsoon blows steadily from the great Indian Ocean. The former, affected by the wintry chills of the vast tracts of land which it traverses before crossing the Bay of Bengal, is subject to many local variations and intervals of calm. But the latter, after the first violence of its outset is abated, becomes nearly uniform throughout the period of its prevalence, and presents the character of an on-shore breeze extending over a prodigious expanse of sea and land, and exerting a powerful influence along the regions of southern Asia.

In Ceylon the proverbial fickleness of the winds, and the uncertainty which characterises the seasons in northern climates, is comparatively unknown; and the occurrence of changes or rain may be anticipated with considerable accuracy in any month of a coming year. There are, of course, abnormal seasons with higher ranges of temperature, heavier rains, or droughts of longer continuance, but such extremes are exceptional and rare. Great atmospheric changes occur only at two opposite periods of the year, and so gradual is their approach that the climate is monotonous, and one longs to see again "the falling of the leaf" to diversify the sameness of perennial verdure. The line is faint which divides the seasons. No period of the year is divested of its seed-time and its harvest in some part of the island; and fruit hangs ripe on the same branches that are garlanded with opening buds. But as every plant has its own period for the production of its flowers and fruit, each month is characterised by its own peculiar flora.

As regards the foliage of the trees, it might be expected that the variety of tints would be wanting which forms the charm of a European landscape, and that all nature would wear one mantle of unchanging green. But it has been remarked by a tasteful observer[1] that such is far from the fact, and though in Ceylon there is no revolution of seasons, the change of leaf on the same plant exhibits colours as bright as those which tinge the autumnal woods of America. It is not the decaying leaves, but the fresh shoots, which exhibit these brightened colours, the older are still vividly green, whilst the young are bursting forth; and the extremities of the branches present tufts of pale yellow, pink, crimson, and purple, which give them at a distance the appearance of a cluster of flowers.[2]

A notice of the variations exhibited by the weather at Colombo may serve as an index to the atmospheric condition of the rest of the island, except in those portions (such as the mountains of the interior, and the low plains of the northern extremity) which exhibit modifications of temperature and moisture incident to local peculiarities.

Wind N.E.	
Temperature, 24 hours:	
Mean greatest	85·6°
Mean least . .	69·2°
Rain (inches) . .	3·1

January.—At the opening of the year, the north-east monsoon, which sets in two months previously, is nearly in mid career. This wind, issuing from the chill north and robbed of its aqueous vapour in passing over the elevated mountain regions on the confines of China and Thibet, sweeps across the Bay of Bengal, whence its lowest strata imbibe a quan-

[1] Prof. Harvey, Trin. Coll. Dublin.

[2] Some few trees, such as the margosa (*Azadirachta Indica*), the country almond (*Terminalia catappa*), and others, are deciduous, and part with their leaves. The cinnamon shoots forth in all shades from bright yellow to dark crimson. The maella (*Olax Zeylanica*) has always a copper colour; and the ironwood trees of the interior have a perfect blaze of young crimson leaves, as brilliant as flowers. The lovi-lovi (*Flacourtia inermis*) has the same peculiarity; while the large bracts of the mussænda (*Mussænda frondosa*) attract the notice of Europeans for their singular whiteness.

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tity of moisture, moderate in amount, yet still leaving the great mass of air far below saturation. Hence it reaches Ceylon comparatively dry, and its general effects are parching and disagreeable. This character is increased as the sun recedes towards its most southern declination, and the wind acquires a more direct draught from the north; passing over the Indian peninsula and almost totally divested of humidity, its blows down the western coast of the island, and is known there by the name of the "along-shore-wind." For a time its influence is uncomfortable and its effects injurious both to health and vegetation: it warps and rends furniture, dries up the surface of the earth, and withers the delicate verdure which had sprung up during the prevalence of the previous rains. These characteristics, however, subside towards the end of the month, when the wind becomes somewhat variable with a westerly tendency and occasional showers; and the heat of the day is then partially compensated by the greater freshness of the nights. The fall of rain within the month scarcely exceeds three inches.

Wind N.E.
Temperature, 24 hours:
Mean greatest . 89°
Mean least . . 71°
Rain (inches) . . 2·1

February is dry and hot during the day, but the nights are cloudless and cool, and the moonlight singularly agreeable. Rain is rare, and when it occurs it falls in dashes, succeeded by damp and sultry calms. The wind is unsteady and shifts from north-east to north-west, sometimes failing entirely between noon and twilight. The quantity of rain is less than in January, and the difference of temperature between day and night is frequently as great as 15° or 20°.[1]

[1] Dr. MACVICAR, in a paper in the *Ceylon Miscellany*, July, 1843, recorded the results of some experiments, made near Colombo, as to the daily variation of temperature and its effects on cultivation, from which it appeared that a register thermometer, exposed on a tuft of grass in the cinnamon garden in a clear night and under the open sky, on the 2nd of January, 1841, showed in the morning that it had been so low as 52°, and when laid on the ground in the same place in the sunshine on the following day, it rose to upwards of 140° Fahr.

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Wind N.E. to N.W.
Temperature, 24 hours:
Mean greatest 87·7°
Mean least . . 73·1°
Rain (inches) . . . 2·1

March. — In March the heat continues to increase, the earth receiving more warmth than it radiates or parts with by evaporation. The day becomes oppressive, the nights unrefreshing, the grass is withered and brown, the earth hard and cleft, the lakes shrunk to shallows, and the rivers evaporated to dryness. Europeans now escape from the low country, and betake themselves to the shade of the forests adjoining the coffee-plantations in the hills; or to the still higher sanatarium of Neuera-ellia, nearly the loftiest plateau in the mountains of the Kandyan range. The winds, when any are perceptible, are faint and unsteady with a still increasing westerly tendency, partial showers sometimes fall, and thunder begins to mutter towards sunset. At the close of the month, the mean temperature will be found to have advanced about a degree, but the sensible temperature and the force of the sun's rays are felt in a still more perceptible proportion.

Wind N.W. to S.W.
Temperature, 24 hours:
Mean greatest . 88·7°
Mean least . . . 73·6°
Rain (inches) . . . 7·4

April is by far the most oppressive portion of the year for those who remain at the sea-level of the island. The temperature continues to rise as the sun in his northern progress passes vertically over the island. A mirage fills the hollows with mimic water; the heat in close apartments becomes extreme, and every living creature flies to the shade from the suffocating glare of mid-day. At length the sea exhibits symptoms of an approaching change, a ground swell sets in from the west, and the breeze towards sunset brings clouds and grateful showers. At the end of the month the mean temperature attains its greatest height during the year, being about 88° in the day, and 10° lower at night.

Wind N.W. to S.W.
Temperature, 24 hours:
Mean greatest . 87·2°
Mean least . . 72·9°
Rain (inches) . . 13·3

May is signalised by the great event of the change of the monsoon, and all the grand phenomena which accompany its approach.

It is difficult for any one who has not

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resided in the tropics to comprehend the feeling of enjoyment which accompanies these periodical commotions of the atmosphere; in Europe they would be fraught with annoyance, but in Ceylon they are welcomed with a relish proportionate to the monotony they dispel.

Long before the wished-for period arrives, the verdure produced by the previous rains becomes almost obliterated by the burning droughts of March and April. The deciduous trees shed their foliage, the plants cease to put forth fresh leaves, and all vegetable life languishes under the unwholesome heat. The grass withers on the baked and cloven earth, and red dust settles on the branches and thirsty brushwood. The insects, deprived of their accustomed food, disappear underground or hide beneath the decaying bark; the waterbeetles bury themselves in the hardened mud of the pools, and the *helices* retire into the crevices of the stones or the hollows amongst the roots of the trees, closing the apertures of their shells with the hybernating epiphragm. Butterflies are no longer seen hovering over the flowers, the birds appear fewer and less joyous, and the wild animals and crocodiles, driven by the drought from their accustomed retreats, wander through the jungle, and even venture to approach the village wells in search of water. Man equally languishes under the general exhaustion, ordinary exertion becomes distasteful, and the native Singhalese, although inured to the climate, move with lassitude and reluctance.

Meanwhile the air becomes loaded to saturation with aqueous vapour drawn up by the augmented force of evaporation acting vigorously over land and sea: the sky, instead of its brilliant blue, assumes the sullen tint of lead, and not a breath disturbs the motionless rest of the clouds that hang on the lower range of hills. At length, generally about the middle of the month, but frequently earlier, the sultry suspense is broken by the arrival of the wished-for change. The sun has by

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this time nearly attained his greatest northern declination, and created a torrid heat throughout the lands of southern Asia and the peninsula of India. The air, lightened by its high temperature and such watery vapour as it may contain, rises into loftier regions and is replaced by indraughts from the neighbouring sea, and thus a tendency is gradually given to the formation of a current bringing up from the south the warm humid air of the equator. The wind, therefore, which reaches Ceylon comes laden with moisture, taken up in its passage across the great Indian Ocean. As the monsoon draws near, the days become more overcast and hot, banks of clouds rise over the ocean to the west, and in the peculiar twilight the eye is attracted by the unusual whiteness of the sea-birds that sweep along the strand to seize the objects flung on shore by the rising surf.

At last the sudden lightnings flash among the hills and sheet through the clouds that overhang the sea[1], and with a crash of thunder the monsoon bursts over the thirsty land, not in showers or partial torrents, but in a wide deluge, that in the course of a few hours overtops the river banks and spreads in inundations over every level plain.

All the phenomena of this explosion are stupendous: thunder, as we are accustomed to be awed by it in Europe, affords but the faintest idea of its overpowering grandeur in Ceylon, and its sublimity is infinitely increased as it is faintly heard from the shore, resounding through night and darkness over the gloomy sea. The lightning, when it touches the earth where

[1] The lightnings of Ceylon are so remarkable, that in the middle ages they were as well known to the Arabian seamen, who coasted the island on their way to China, as in later times the storms that infested the Cape of Good Hope were familiar to early navigators of Portugal. In the *Mohit* of SIDI ALI CHELEBI, translated by Von Hammer, it is stated that to seamen, sailing from Diu to Malacca, "the sign of Ceylon being near is continual lightning, be it accompanied by rain or without rain; so that 'the lightning of Ceylon' is proverbial for a liar!"—*Journ. Asiat. Soc. Beng.* v. 465.

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it is covered with the descending torrent, flashes into it and disappears instantaneously; but, when it strikes a drier surface, in seeking better conductors, it often opens a hollow like that formed by the explosion of a shell, and frequently leaves behind it traces of vitrification.[1] In Ceylon, however, occurrences of this kind are rare, and accidents are seldom recorded from lightning, probably owing to the profusion of trees, and especially of coco-nut palms, which, when drenched with rain, intercept the discharge, and conduct the electric matter to the earth. The rain at these periods excites the astonishment of a European: it descends in almost continuous streams, so close and so dense that the level ground, unable to absorb it sufficiently fast, is covered with one uniform sheet of water, and down the sides of acclivities it rushes in a volume that wears channels in the surface.[2] For hours together, the noise of the torrent, as it beats upon the trees and bursts upon the roofs, flowing thence in rivulets along the ground, occasions an uproar that drowns the ordinary voice, and renders sleep impossible.

This violence, however, seldom lasts more than an hour or two, and gradually abates after intermittent paroxysms, and a serenely clear sky supervenes. For some days, heavy showers continue to fall at intervals

[1] See DARWIN'S *Naturalist's Voyage*, ch. iii. for an account of those vitrified siliceous tubes which are formed by lightning entering loose sand. During a thunderstorm which passed over Galle, on the 16th May, 1854, the fortifications were shaken by lightning, and an extraordinary cavity was opened behind the retaining wall of the rampart, where a hole, a yard in diameter, was carried into the ground to the depth of twenty feet, and two chambers, each six feet in length, branched out on either side at its extremity.

[2] One morning on awaking at Pusilawa, in the hills between Kandy and Neuera-ellia, I was taken to see the effect of a few hours' rain, during the night, on a macadamised road which I had passed the evening before. There was no symptom of a storm at sunset, and the morning was bright and cloudless; but between midnight and dawn such an inundation had swept the highway that in many places the metal had been washed over the face of the acclivity; and in one spot where a sudden bend forced the torrent to impinge against the bank, it had scooped out an excavation extending to the centre of the high road, thirteen feet in diameter, and deep enough to hold a carriage and horses.

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in the forenoon; and the evenings which follow are embellished by sunsets of the most gorgeous splendour, lighting the fragments of clouds that survive the recent storm.

June.—The extreme heat of the previous month becomes modified in June: the winds continue steadily to blow from the south-west, and frequent showers, accompanied by lightning and thunder, serve still further to diffuse coolness throughout the atmosphere and verdure over the earth.

Wind S.W.	
Temperature, 24 hours:	
Mean greatest	85·8°
Mean least	74·4°
Rain (inches)	6·8

So instantaneous is the response of Nature to the influence of returning moisture, that, in a single day, and almost between sunset and dawn, the green hue of reviving vegetation begins to tint the saturated ground. In ponds, from which but a week before the wind blew clouds of sandy dust, the peasantry are now to be seen catching the re-animated fish; and tank-shells and water-beetles revive and wander over the submerged sedges. The electricity of the air stimulates the vegetation of the trees; and scarce a week will elapse till the plants are covered with the larvæ of butterflies, the forest murmuring with the hum of insects, and the air harmonious with the voice of birds.

The extent to which the temperature is reduced, after the first burst of the monsoon, is not to be appreciated by the indications of the thermometer alone, but is rendered still more sensible by the altered density of the air, the drier state of which is favourable to evaporation, whilst the increase of its movement bringing it more rapidly in contact with the human body, heat is more readily carried off, and the coolness of the surface proportionally increased. It occasionally happens during the month of June that the westerly wind acquires considerable strength, sometimes amounting to a moderate gale. The fishermen, at this period, seldom put to sea: their canoes are drawn far up in lines upon the shore, and vessels riding in the roads of

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Colombo are often driven from their anchorage and stranded on the beach.]

Wind S.W.
Temperature, 24 hours:
Mean greatest . 84·8°
Mean least . . 74·9°
Rain (inches) . . 3·4

July resembles, to a great extent, the month which precedes it, except that, in all particulars, the season is more moderate, showers are less frequent, there is less wind, and less absolute heat.

Wind S.W.
Temperature, 24 hours:
Mean greatest . 84 9°
Mean least . . 14·7°
Rain (inches) . . 2 8

August.—In August the weather is charming, notwithstanding a slight increase of heat, owing to diminished evaporation; and the sun being now on its return to the equator, its power is felt in greater force on full exposure to its influence.

Wind S.W.
Temperature, 24 hours:
Mean greatest . 84·9°
Mean least . . 74·8°
Rain (inches) . . 5·2

September.—The same atmospheric condition continues throughout September, but towards its close the sea-breeze becomes unsteady and clouds begin to collect, symptomatic of the approaching change to the north-east monsoon. The nights are always clear and delightfully cool. Rain is sometimes abundant.

Wind S.W. and N.E.
Temperature, 24 hours:
Mean greatest . 85·1°
Mean least . . 73·3°
Rain (inches) . . 11·2

October is more unsettled, the wind veering towards the north, with pretty frequent rain; and as the sun is now far to the southward, the heat continues to decline.

Wind N.E.
Temperature, 24 hours:
Mean greatest . 86·3°
Mean least . . 71·5°
Rain (inches) . . 10·7

November sees the close of the south-west monsoon, and the arrival of the north-eastern. In the early part of the month the wind visits nearly every point of the compass, but shows a marked predilection for the north, generally veering from N.E. at night and early morning, to N.W. at noon; calms are frequent and precede gentle showers, and clouds form round the lower range of hills. By degrees as the sun advances in its southern declination, and warms the lower half of the great African continent, the current of heated air ascending from the equatorial belt leaves

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a comparative vacuum, towards which the less rarefied atmospheric fluid is drawn down from the regions north of the tropic, bringing with it the cold and dry winds from the Himalayan Alps, and the lofty ranges of Assam. The great change is heralded as before by oppressive calms, lurid skies, vivid lightning, bursts of thunder, and tumultuous rain. But at this change of the monsoon the atmospheric disturbance is less striking than in May; the previous temperature is lower, the moisture of the air is more reduced, and the change is less agreeably perceptible from the southern breeze to the dry and parching wind from the north.

Wind N.E.
Temperature 24 hours:
Mean greatest . 85°
Mean least . . 70°
Rain (inches) . . 4·3

December. — In December the sun attains to its greatest southern declination, and the wind setting steadily from the north-east, brings with it light but frequent rains from the Bay of Bengal. The thermometer shows a maximum temperature of 85° with a minimum of 70°; the morning and the afternoon are again enjoyable in the open air, but at night every lattice that faces the north is cautiously closed against the treacherous "along-shore-wind."

Notwithstanding the violence and volume in which the rains have been here described as descending during the paroxysms of the monsoons, the total rain-fall in Ceylon is considerably less than on the continent of India. Throughout Hindustan the annual mean is 117·5 inches, and on some parts on the Malabar coast, upwards of 300 inches have fallen in a single year[1]; whereas the average in Ceylon rarely exceeds 80, and the highest quantity registered in an exceptional season was 120 inches.

The distribution is of course unequal, both as to time and localities, and in those districts where the

[1] At Mahabaleshwar, in the Western Ghauts, the annual mean is 254 inches, and at Uttray Mullay, in Malabar, 263; whilst at Bengal it is 209 inches at Sylhet; and 610·3 at Cherrapong.

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fall is most considerable, the number of rainless days is the greatest.[1] An idea may be formed of the deluge that descends in Colombo during the change of the monsoon, from the fact that out of 72·4 inches, the annual average there, no less than 20·7 inches fall in April and May, and 21·9 in October and November, a quantity one-third greater than the total rain in England throughout an entire year.

In one important particular the phenomenon of the Dekkan affords an analogy for that which presents itself in Ceylon. During the south-west monsoon the clouds are driven against the lofty chain of mountains that overhang the western shore of the peninsula, and their condensed vapour descends there in copious showers. The winds, thus early robbed of their moisture, carry but little rain to the plains of the interior, and whilst Malabar is saturated by daily showers, the sky of Coromandel is clear and serene. In the north-east monsoon a condition the very opposite exists; the wind that then prevails is much drier, and the hills which it encounters being of lower altitude, the rains are carried further towards the interior, and whilst the weather is unsettled and stormy on the eastern shore, the western is comparatively exempt, and enjoys a calm and cloudless sky.[2]

In like manner the west coast of Ceylon presents a contrast with the east, both in the volume of rain in each of the respective monsoons, and in the influence which the same monsoon exerts simultaneously on the

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[1] The average number of days on which rain fell at Colombo in the years 1832, 1833, 1834, and 1835, was as follows:—

	Days.
In January	3
February	4
March	6
April	11
May	13
June	13
July	8
In August	10
September	14
October	17
November	11
December	8
Total	118

[2] The mean of rain is, on the western side of the Dekkan 80 inches, and on the eastern 52·8.

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one side of the island and on the other. The greatest quantity of rain falls on the south-western portion, in the month of May, when the wind from the Indian Ocean is intercepted, and its moisture condensed by the lofty mountain ranges, surrounding Adam's Peak. The region principally affected by it stretches from Point-de-Galle, as far north as Putlam, and eastward till it includes the

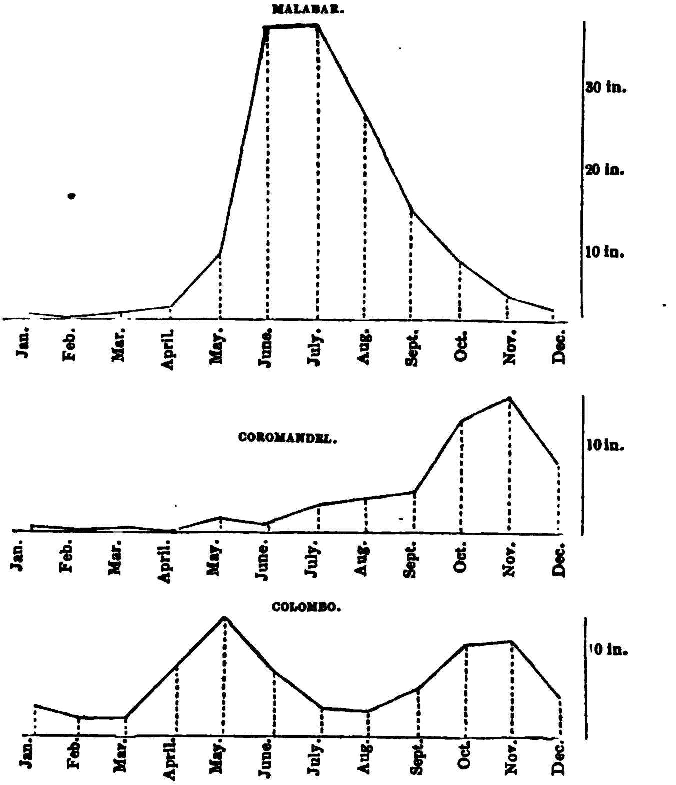

DIAGRAM EXHIBITING THE COMPARATIVE FALL OF RAIN ON THE SEABORDE OF THE DEKKAN, AND AT COLOMBO, IN THE WESTERN PROVINCE OF CEYLON.

One maximum at the spring change of the monsoon anticipating a little that on the West coast of India; another at the autumnal change corresponding more exactly with that of the East coast. The entire fall through the year more equably distributed at Colombo.

greater portion of the ancient Kandyan kingdom. But the rains do not reach the opposite side of the island; whilst the west coast is deluged, the east is sometimes exhausted with dryness; and it not unfrequently happens that different aspects of the same mountain present at

the same moment the opposite extremes of drought and moisture.[1]

On the east coast, on the other hand, the fall, during the north-east monsoon, is very similar in degree to that on the coast of Coromandel, as the mountains are lower and more remote from the sea, the clouds are carried further inland, and it rains simultaneously on both sides of the island, though much less on the west than during the other monsoon.

The climate of Galle, as already stated, resembles in its general characteristics that of Colombo, but, being further to the south, and more equally exposed to the influence of both the monsoons, the temperature is not quite so high; and, during the cold season, it falls some degrees lower, especially in the evening and early morning.[2]

Kandy, from its position, shares in the climate of the western coast; but, from the frequency of the mountain showers, and its situation, at an elevation of upwards of sixteen hundred feet above the level of the sea, it enjoys a much cooler temperature. It differs from the low country in one particular, which is very striking — the early period of the day at which the maximum heat is attained. This at Colombo is generally between two and three o'clock in the afternoon, whereas at Kandy the thermometer shows the highest tempera-

[1] ADMIRAL FITZROY has described, in his *Narrative of the Voyages of the Adventure and Beagle*, the striking degree in which this simultaneous dissimilarity of climate is exhibited on opposite sides of the Galapagos Islands; one aspect exposed to the south being covered with verdure and freshened with moisture, whilst all others are barren and parched.—Vol. ii. p. 502-3. The same state of things exists in the east and west sides of the Peruvian Andes, and in the mountains of Patagonia. And no more remarkable example of it exists than in the island of Socotra, east of the Straits of Bab el Mandeb, the west coast of which, during the north-east monsoon, is destitute of rain and verdure, whilst the eastern side is enriched by streams and covered by luxuriant pasturage.—*Journ. Asiat. Soc. Beng.* vol. iv. p. 141.

[2] At Point-de-Galle, in 1854, the number of rainy days was as follows:

	Days.		Days.
January	12	July	11
February	7	August	21
March	16	September	16
April	12	October	20
May	23	November	15
June	18	December	13

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ture of the day between ten and eleven o'clock in the morning.

In the low country, ingenuity has devised so many expedients for defence from the excessive heat of the forenoon, that the languour it induces is chiefly experienced after sunset, and the coolness of the night is insufficient to compensate for the exhaustion of the day; but, in Kandy, the nights are so cool that it is seldom that warm covering can be altogether dispensed with. In the colder months, the daily range of the thermometer is considerable — approaching 30°; in the others, it differs little from 15°. The average mean, however, of each month throughout the year is nearly identical, deviating only a degree from 76°, the mean annual temperature.[1]

[1] The following Table appeared in the *Colombo Observer*, and is valuable from the care taken by Mr. Caley in its preparation;

Analysis of the Climate at Peradenia, from 1851 *to* 1858 *inclusive.*

Months.	Temperature.			Average of Years	Rainfall.		Remarks.
	Max.	Min.	Mean.		Inches.	Average of Years	
January .	85·0	52·5	74·06	6	4·04	6	Fine, sunny, heavy dew at night, hot days, and cold nights and mornings.
February.	87·75	55·0	75·76	7	1·625	6	Fine, sunny, dewy nights, foggy mornings, days hot, nights and mornings cold.
March .	89·5	59·5	77·42	7	3·669	6	Generally a very hot and oppressive month.
April . .	89·5	67·5	77·91	7	7·759	6	Showery, sultry, and oppressive weather.
May . .	88 0	66·0	77·7	8	8·022	6	Cloudy, windy, rainy; monsoon generally changes.
June . .	86 0	71·0	76·69	8	7·155	6	A very wet and stormy month.
July . .	83·5	67·0	75·64	8	5·72	6	Ditto ditto.
August .	85·5	67·0	75·81	8	8·55	6	Showery, but sometimes more moderate, variable.
September	86·5	67·0	76·13	8	6·318	6	Pretty dry weather, compared with the next two months.
October .	85·75	68·2	75·1	8	15·46	6	Wind variable, much rain.
November	84·0	62·0	74·79	8	14·732	6	Wind variable, storms from all points of compass, wet; monsoon generally changes.
December	82·75	57·0	74·05	7	7·72	5	Sometimes wet, but generally more moderate; towards end of year like January weather.
	Mean yearly Temperature, 75·92°.			Mean yearly Rainfall, 90·75 in. nearly.			Nov. 29, 1858. J. A. CALEY.

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In all the mountain valleys, the soil being warmer than the air, vapour abounds in the early morning for the most part of the year. It greatly adds to the chilliness of travelling before dawn; but, generally speaking, it is not wetting, as it is charged with the same electricity as the surface of the earth and the human body. When seen from the heights, it is a singular object, as it lies compact and white as snow in the hollows beneath, but it is soon put in motion by the morning currents, and wafted in the direction of the coast, where it is dissipated by the sunbeams.

Snow is unknown in Ceylon; *Hail* occasionally falls in the Kandyan hills at the change of the monsoon[1], but more frequently during that from the north-east. As observed at Kornegalle, the clouds, after collecting as usual for a few evenings, and gradually becoming more dense, advanced in a wedge-like form, with a well-defined outline. The first fall of rain was preceded by a downward blast of cold air, accompanied by hailstones which outstripped the rain in their descent. Rain and hail then poured down together, and, eventually, the latter only spread its deluge far and wide. In 1852, the hail which thus fell at Kornegalle was of such a size that half-a-dozen lumps filled a tumbler. In shape, they were oval and compressed, but the mass appeared to have formed an hexagonal pyramid, the base of which was two inches in diameter, and about half-an-inch thick, gradually thinning towards the edge. They were tolerably solid internally, each containing about the size of a pea of clear ice at the centre, but the sides and angles were spongy and flocculent, as if the particles had been driven together by the force of

[1] It is stated in the *Physical Atlas* of KEITH JOHNSTON, that hail in India has not been noticed south of Madras. But in Ceylon it has fallen very recently at Kornegalle, at Badulla, at Kaduganawa; and I have heard of a hail storm at Jaffna. On the 24th of Sept. 1857, during a thunder-storm, hail fell near Matelle in such quantity that in places it formed drifts upwards of a foot in depth.

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the wind, and had coalesced at the instant of contact. A phenomenon so striking as the fall of ice, at the moment of the most intense atmospherical heat, naturally attracts the wonder of the natives, who hasten to collect the pieces, and preserve them, when dissolved, in bottles, from a belief in their medicinal properties. Mr. Morris, who has repeatedly observed hailstones in the Seven Korles, is under the impression that their occurrence always happens at the first outburst of the monsoon, and that they fall at the moment, which is marked by the first flash of lightning.

According to Professor Stevelly, of Belfast, the rationale of their appearance on such occasions seems to be that, on the sudden formation and descent of the first drops, the air expanding and rushing into the void spaces, robs the succeeding drops of their caloric so effectually as to send them to the earth frozen into ice-balls.

These descriptions, it will be observed, apply exclusively to the southern regions on the east and west of Ceylon; and, in many particulars, they are inapplicable to the northern portions of the island. At Trincomalie, the climate bears a general resemblance to that of the Indian peninsula south of Madras: showers are frequent, but light, and the rain throughout the year does not exceed forty inches. With moist winds and plentiful dew, this sustains a vigorous vegetation near the coast; but in the interior it would be insufficient for the culture of grain, were not the water husbanded in tanks; and the bulk of the population are, for this reason, settled along the banks of the great rivers.

The temperature of this part of Ceylon follows the course of the sun, and ranges from a minimum of 70° in December and January, to a maximum of 94° in May and June; but the heat is rendered tolerable at all seasons by the steadiness of the land and sea breezes.[1]

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[1] The following facts regarding the climate of Trincomalie have been arranged from elaborate returns furnished by Mr. Higgs, the master-

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In the extreme north of the island, the peninsula of Jaffna, and the vast plains of Neuera-kalawa and the Wanny, form a third climatic division, which, from the geological structure and peculiar configuration of the district, differs essentially from the rest of Ceylon. This region, which is destitute of mountains, is undulating in a very slight degree; the dry and parching north-east wind desiccates the soil in its passage, and the sandy plains are covered with a low and scanty vegetation, chiefly fed by the night dews and whatever moisture is brought by the on-shore wind. The total rain of the year does not exceed thirty inches; and the inhabitants live in frequent apprehension of droughts and famines. These conditions attain their utmost manifestation at the extreme north and in the Jaffna peninsula: there the temperature is the highest[1] in the island, and, owing to the humidity of the situation and the total absence of hills, it is but little affected by the changes of the monsoons; and the thermometer keeps a regulated pace with the progress of the sun to and from the solstices. The soil, except in particular spots, is porous and sandy, formed from the detritus of the coral rocks which it overlays. It is subject to droughts

attendant of the port, and published under the authority of the meteorological department of the Board of Trade:—

Trincomalie.

1854.	Mean Maximum Temperature.	Mean Minimum Temperature.	Extreme range for the Month.	Highest Temperature noted.	Days of Rain.	1854.	Mean Maximum Temperature.	Mean Minimum Temperature.	Extreme range for the Month.	Highest Temperature noted.	Days of Rain.
Jan.	81·3°	74·7°	14°	83	10	July	87·7°	77·7°	16°	90	5
Feb.	83·8	75·8	14	86	7	Aug.	87·9	77·4	16	91	4
Mar.	85·9	76·1	16	88	3	Sept.	89·3	77·8	18	93	2
April	89·6	78·9	16	92	3	Oct.	85·2	75·8	15	89	14
May	89·1	79·3	19	93	3	Nov.	81·0	74·9	11	83	15
June	90·0	79·5	19	94	3	Dec.	80·1	74·3	11	82	15

Mean temperature for the year 81·4.

[1] The mean lowest temperature at Jaffna is 70°, the mean highest 90°; but in 1845-6 the thermometer rose to 99° and 100°.

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sometimes of a whole year's continuance; and rain, when it falls, is so speedily absorbed, that it renders but slight service to cultivation, which is entirely carried on by means of tanks and artificial irrigation, in the practice of which the Tamil population of this district exhibits singular perseverance and ingenuity.[1] In the dry season, when scarcely any verdure is discernible above ground, the sheep and goats feed on their knees—scraping away the sand, in order to reach the wiry and succulent roots of the grasses. From the constancy of this practice horny callosities are produced, by which these hardy creatures may be distinguished.

Water-spouts are frequent on the coast of Ceylon, owing to the different temperature of the currents of air passing across the heated earth and the cooler sea, but instances are very rare of their bursting over land, or of accidents in consequence.[2]

A curious phenomenon, to which the name of "anthelia" has been given, and which may probably have suggested to the early painters the idea of the glory surrounding the heads of beatified saints, is to be seen in singular beauty, at early morning, in Ceylon. When the light is intense, and the shadows proportionally dark—when the sun is near the horizon, and the shadow of a person walking is thrown on the dewy grass—each particle furnishes a double reflection from its concave

[1] For an account of the Jaffna wells, and the theory of their supply with fresh water, see ch. i. p. 21.

[2] CAMOENS, who had opportunities of observing the phenomena of these seas during his service on board the fleet of Cabral, off the coast of Malabar and Ceylon, has introduced into the *Lusiad* the episode of a water-spout in the Indian Ocean; but, under the belief that the water which descends had been previously drawn up by suction from the ocean, he exclaims:—

"But say, ye sages, who can weigh the cause,
And trace the secret springs of Nature's laws;
Say why the wave, of bitter brine erewhile,
Should to the bosom of the deep recoil,
Robbed of its salt, and from the cloud distil,
Sweet as the waters of the limpid rill?"
(Book v.)

But the truth appears to be that the torrent which descends from a water-spout, is but the condensed accumulation of its own vapour, and, though in the hollow of the lower cone which rests upon the surface of the sea, salt water may possibly ascend in the partial vacuum caused by revolution; or spray may be caught up and collected by the wind, still these cannot be raised by it beyond a very limited height, and what Camoens saw descend was, as he truly says, the sweet water distilled from the cloud.

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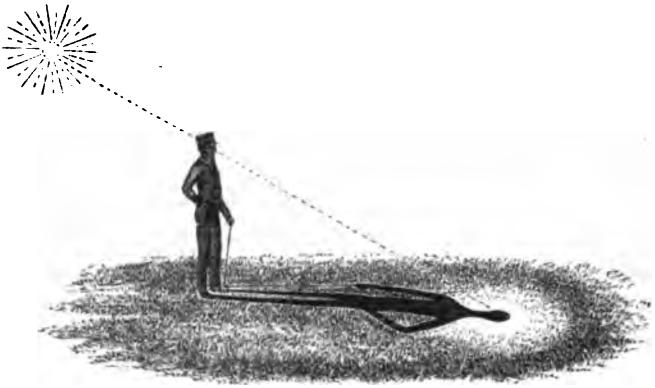
and convex surfaces; and to the spectator his own figure, but more particularly the head, appears sur-



THE ANTHELIA, AS IT APPEARS TO THE PERSON HIMSELF.

rounded by a halo as vivid as if radiated from diamonds.[1] The Buddhists may possibly have taken from this beautiful object their idea of the *agni* or emblem of the sun, with which the head of Buddha is surmounted. But unable to express a *halo* in sculpture, they concentrated it into a *flame.*

Another luminous phenomenon which sometimes appears in the hill country, consists of beams of light, which intersect the sky, whilst the sun is yet in the ascendant; sometimes horizontally, accompanied by intermitting movements, and sometimes vertically, a broad belt of the blue sky interposing between them.[2]

[1] SCORESBY describes the occurrence of a similar phenomenon in the Arctic Seas in July, 1813, the luminous circle being produced on the particles of fog which rested on the calm water. "The lower part of the circle descended beneath my feet to the side of the ship, and although it could not be a hundred feet from the eye, it was perfect, and the colours distinct. The centre of the coloured circle was distinguished by my own shadow, the head of which, enveloped by a halo, was most conspicuously pourtrayed. The halo or glory was evidently impressed on the fog, but the figure appeared to be a shadow on the water; the different parts became obscure in proportion to their remoteness from the head, so that the lower extremities were not perceptible."—*Account of the Arctic Regions*, vol. i. ch. v. sec. vi. p. 394. A similar phenomenon occurs in the Khasia Hills, in the north-east of Bengal. — *Asiat. Soc. Journ. Beng.* vol. xiii. p. 616.

[2] VIGNE mentions an appearance of this kind in the valley of Kashmir: "Whilst the rest of the horizon was glowing golden over the mountain tops, a broad, well-defined, ray-

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In Ceylon this is doubtless owing to the air holding in suspension a large quantity of vapour, which receives shadows and reflects rays of light. The natives, who designate them "Buddha's rays," attach a superstitious dread to their appearance, and believe them to be portentous of misfortune—in every month, with the exception of *May*, which, for some unexplained reason, is exempted.

HEALTH.—In connection with the subject of "Climate," one of the most important inquiries is the probable effect on the health and constitution of a European produced by prolonged exposure to an unvarying temperature, upwards of 30 degrees higher than the average of Great Britain. But to this the most tranquillising reply is the assurance that *mere heat, even to a degree beyond that of Ceylon, is not unhealthy in itself.* Aden, enclosed in a crater of an extinct volcano, is not considered insalubrious; and the hot season in India, when the thermometer stands at 100° at midnight, is comparatively a healthy period of the year. In fact, in numerous cases heat may be the means of removing the immediate sources of disease. Its first perceptible effect is a slight increase of the normal bodily temperature beyond 98°, and, simultaneously, an increased activity of all the vital functions. To this everything contributes an exciting sympathy—the glad surprise of the natural scenery, the luxury of verdure, the tempting novelty of fruits and food, and all the unaccustomed attractions of a tropical home. Under these combined influences the nervous sensibility is considerably excited, and the circulation acquires greater velocity, with somewhat diminished force. This is soon followed,

shaped streak of indigo was shooting upwards in the zenith: it remained nearly stationary about an hour, and was then blended into the sky around it, and disappeared with the day. It was, no doubt, owing to the presence of some particular mountains which intercepted the red rays, and threw a blue shadow, by causing so much of the sky above Kashmir to remain unaffected by them."—*Travels in Kashmir*, vol. ii. ch. x. p. 115.

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however, by the disagreeable evidences of the effort, made by the system to accommodate itself to the new atmospheric condition. The skin often becomes fretted by "prickly heat," or tormented by a profusion of boils, but relief being speedily obtained through these resources, the new comer is seldom afterwards annoyed by a recurrence of the process, unless under circumstances of impaired tone, the result of weakened digestion or climatic derangement.

Malaria.—Compared with Bengal and the Dekkan, the climate of Ceylon presents a striking superiority in mildness and exemption from all the extremes of atmospheric disturbance; and, except in particular localities, all of which are well known and avoided[1], from being liable after the rains to malaria, or infested at particular seasons with agues and fever, a lengthened residence in the island may be contemplated, without the slightest apprehension of prejudicial results. These pestilential localities are chiefly at the foot of mountains, and, strange to say, in the vicinity of some active rivers, whilst the vast level plains, whose stagnant waters are made available for the cultivation of rice, are seldom or never productive of disease. It is even believed that the deadly air is deprived of its poison in passing over an expanse of still water; and one of the most remarkable circumstances is, that the points fronting the aerial currents are those exposed to danger, whilst projecting cliffs, belts of forest, and even moderately high walls, serve to protect all behind them from attack.[2] In tra-

[1] Notwithstanding this general condition, fevers of a very serious kind have been occasionally known to attack persons on the coast, who had never exposed themselves to the miasma of the jungle. Such instances have occurred at Galle, and more rarely at Colombo. The characteristics of places in this regard have, in some instances, changed unaccountably; thus at Peradenia, close to Kandy, it was at one time regarded as dangerous to sleep.

[2] Generally speaking, a flat open country is healthy, either when flooded deeply by rains, or when dried to hardness by the sun; but in the process of desiccation, its exhalations are perilous. The wooded slopes at the base of mountains are likewise notorious for fevers; such as the *terrai* of the Nepal hills, the Wynaad jungle, at the foot of the Ghauts, and the eastern side of the mountains of Ceylon.

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versing districts suspected of malaria, experience has dictated certain precautions, which, with ordinary prudence and firmness, serve to neutralise the risk — retiring punctually at sunset, generous diet, moderate stimulants, and the daily use of quinine both before and after exposure. These, and the precaution, at whatever sacrifice of comfort, to sleep under mosquito curtains, have been proved in long journeys to be valuable prophylactics against fever and the pestilence of the jungle.

Food. — Always bearing in mind that of the quantity of food habitually taken in a temperate climate, a certain proportion is consumed to sustain the animal heat, it is obvious that in the glow of the tropics, where the heat is already in excess, this portion of the ingesta not only becomes superfluous so far as this office is concerned, but occasions disturbance of the other functions both of digestion and elimination. Over-indulgence in food, equally with intemperance in wine, is one fruitful source of disease amongst Europeans in Ceylon; and maladies and mortality are often the result of the former, in patients who would repel as an insult the imputation of the latter.

So well have national habits conformed to instinctive promptings in this regard, that the natives of hot countries have unconsciously sought to heighten the enjoyment of food by taking their principal repast *after sunset*[1]; and the European in the East will speedily discover for himself the prudence, not only of reducing the quantity, but in regard to the quality of his meals, of adopting those articles which nature has bountifully

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[1] The prohibition of swine, which has formed an item in the dietetic ritual of the Egyptians, the Hebrews, and Mahometans, has been defended in all ages, from Manetho and Herodotus downwards, on the ground that the flesh of an animal so foully fed has a tendency to promote cutaneous disorders, a belief which, though held as a fallacy in northern climates, may have a truthful basis in the East. —ÆLIAN, *Hist. Anim.* l. x. 16. In a recent general order Lord Clyde has prohibited its use in the Indian army. Camel's flesh, which is also declared unclean in Leviticus, is said to produce in the Arabs serious derangement of the stomach.

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supplied as best suited to the climate. With a moderate use of flesh meat, vegetables, and especially farinaceous food, are chiefly to be commended.

The latter is rendered attractive by the unrivalled excellence of the Singhalese in the preparation of innumerable curries[1], each tempered by the delicate creamy juice expressed from the flesh of the coco-nut after it has been reduced to a pulp. Nothing of the same class in India can bear a comparison with the piquant delicacy of a curry in Ceylon, composed of fresh condiments and compounded by the skilful hand of a native.

The use of fruit.—Fruits are abundant and wholesome; but with the exception of oranges, pineapples, the luscious mango and the indescribable "rambutan," for want of horticultural attention they are inferior in flavour, and soon cease to be alluring.

Wine. — Wine has of late years become accessible to all, and has thus, in some degree, been substituted for brandy; the abuse of which at former periods is commemorated in the records of those fearful disorders of the liver, derangements of the brain, exhausting fevers, and visceral diseases, which characterise the medical annals of earlier times. With a firm adherence to temperance in the enjoyment of stimulants, and moderation in the pleasures of the table, with attention to exercise and frequent resort to the bath, it may be confidently asserted that health in Ceylon is as capable of preservation and life as susceptible of enjoyment, as in any country within the tropics.

Exposure. — Prudence and foresight are, however, as indispensable there as in any other climate to escape well-understood risks. Catarrhs and rheumatism are

[1] The popular error of thinking curry to be an invention of the Portuguese in India is disproved by the mention in the *Rajavali* of its use in Ceylon in the second century before the Christian era, and in the Mahawanso in the fifth century of it. This subject is mentioned elsewhere: see chapter on the Arts and Sciences of the Singhalese.

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as likely to follow needless exposure to the withering "along-shore wind" of the winter months in Ceylon[1], as they are traceable to unwisely confronting the east winds of March in Great Britain; and during the alternation, from the sluggish heat which precedes the monsoon, to the moist and chill vapours that follow the descent of the rains, intestinal disorders, fevers, and liver complaints are not more characteristic of an Indian monsoon than an English autumn, and are equally amenable to those precautions by which liability may be diminished in either place.

Paleness.—At the same time it must be observed, that the palid complexion peculiar to old residents, is not alone ascribable to an organic change in the skin from its being the medium of perpetual exudation, but in part to a deficiency of red globules in the blood, and mainly to a reduced vigour in the whole muscular apparatus, including the action of the heart, which imperfectly compensates by increased rapidity for diminution of power. It is remarkable how suddenly this sallowness disappears, and is succeeded by the warm tints of health, after a visit of a very few days to the plains of Neuera-ellia, or the picturesque coffee plantations in the hills that surround it.

Ladies.—Ladies, from their more regular and moderate habits, and their avoidance of exposure, might be expected to withstand the climate better than men;

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[1] See *ante*, p. 57. It is an agreeable characteristic of the climate of Ceylon, that sun-stroke, which is so common even in the northern portions of India, is almost unknown in the island. Sportsmen are out all day long in the hottest weather, a practice which would be thought more than hazardous in Oude or the north-west provinces. Perhaps an explanation of this may be found in the difference in moisture in the two atmospheres, which may modify the degrees of evaporation; but the inquiry is a curious one. It is becoming better understood in the army that active service, and even a moderate exposure to the solar rays (*always guarding them from the head*), are conducive rather than injurious to health in the tropics. The pale and sallow complexion of ladies and children born in India, is ascribable in a certain degree to the same process by which vegetables are blanched under shades which exclude the light:—they are reared in apartments too carefully kept dark.

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and to a certain extent the anticipation appears to be correct, but it by no means justifies the assumption of general immunity. Though less obnoxious to specific disease, debility and delicacy are the frequent results of habitual seclusion and avoidance of the solar light. These, added to more obvious causes of occasional illness, suggest the necessity of vigorous exertion and regular exercise as indispensable protectives.

If suitably clothed, and not injudiciously fed, children may remain in the island till eight or ten years of age, when anxiety is excited by the attenuation of the frame and the apparent absence of strength in proportion to development. These symptoms, the result of relaxed tone and defective nutrition, are to be remedied by change of climate either to the more lofty ranges of the mountains, or, more providently, to Europe.

Effects on Europeans already Diseased.—To persons already suffering from disease, the experiment of a residence in Ceylon is one of questionable propriety. Those of a scrofulous diathesis need not consider it hazardous, as experience does not show that in such there is any greater susceptibility to local or constitutional disorders, or that when these are present, there is greater difficulty in their removal.

To those threatened with consumption, the island may be supposed to offer some advantages in the equability of the temperature, and the comparative quiescence of the lungs from reduced necessity for respiratory effort. Besides, the choice of climates presented by Ceylon enables a patient, by the easy change of residence to a different altitude and temperature, avoiding the heats of one period and the dry winds of another, to check to a great extent the predisposing causes likely to lead to the development of tubercle. This, with attention to clothing and systematic exercise as preventives of active disease, may serve to restrain the further progress though it fail to eradicate the tendency to phthisis. But when already the formation of tu-

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bercle has taken place to any considerable extent, and is accompanied by softening, the morbid condition is not unlikely to advance with alarming celerity; and the only compensating circumstance is the diminution of apparent suffering, ascribable to general languor, and the absence of the bronchial irritation occasioned by cold humid air.

Dyspepsia.—Habitual dyspeptics, and those affected by hepatic obstructions, had better avoid a lengthened sojourn in Ceylon; but the tortures of rheumatism and gout, if they be not reduced, are certainly postponed for longer intervals than those conceded to the same sufferers in England. Gout, owing to the great cutaneous excretion, in most instances totally disappears.

Precautions for Health.—Next to attention to diet, health in Ceylon is mainly to be preserved by systematic exercise, and a costume adapted to the climate and its requirements. Paradoxical as it may sound, the great cause of disease in hot climates is *cold.* Nothing ought more cautiously to be watched and avoided than the chills produced by draughts and dry winds; and a change of dress or position should be instantly resorted to when the warning sensation of chilliness is perceived.

Exercise.—The early morning ride, after a single cup of coffee and a biscuit on rising, and the luxury of the bath before dressing for breakfast, constitute the enjoyments of the forenoon; and a similar stroll on horseback, returning at sunset to repeat the bath[1] preparatory to the evening toilette, completes the hygienic discipline of the day. At night the introduction of the Indian punka into bed-rooms would be valuable, a thin flannel coverlet being spread over the bed. Nothing

[1] "Je me souviens que les deux premières années que je fus en ce pais-là, j'eus deux maladies: *alors je pris la coûtume de me bien laver soir et matin,* et pendant 16 ans que j'y ay demeuré depuis, je n'ay pas senti le moindre mal."—RIBEYRO, *Hist. de l'Isle de Ceylan,* vol. v. ch. xix. p. 149.

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serves more effectually to break down an impaired constitution in the tropics than the want of timely and refreshing sleep.

Dress.— In the selection of dress experience has taught the superiority of calico to linen, the latter, when damp from the exhalation of the skin, causing a chill which is injurious, whilst the former, from some peculiarity in its fibre, however moist it may become, never imparts the same sensation of cold. The clothing best adapted to the climate is that whose texture least excites the already profuse perspiration, and whose fashion presents the least impediment to its escape.[1] The discomfort of woollen has led to its avoidance as far as possible; but those who, in England, may have accustomed themselves to flannel, will find the advantage of persevering to wear it, provided it is so light as not to excite perspiration. So equipped for active exercise, exposure to the sun, however hot, may be regarded without apprehension, provided the limbs are in motion and the body in ordinary health; but the instinct of all oriental races has taught the necessity of protecting the head, and European ingenuity has not failed to devise expedients for this all-important object.

From what has been said, it will be apparent that, compared with continental India, the securities for health in Ceylon are greatly in favour of the island. As to the formidable diseases which are common to both, their occurrence in either is characterised by the same appalling manifestations: dysentery fastens, with all its fearful concomitants, on the unwary and incautious; and cholera, with its dark horrors, sweeps mysteriously across neglected districts, exacting its hecatombs. But the visitation and ravages of both are somewhat under control, and

[1] "Man not being created an aquatic animal, his skin cannot with impunity be exposed to perpetual moisture, whether directly applied or arising from perspiration retained by dress. The importance to health of keeping the skin *dry* does not appear to have hitherto received due attention."—Pickering, *Races of Man, &c.*, ch. xliv.

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the experience bequeathed by each gloomy visitation has added to the facilities for checking its recurrence.[1]

In some of the disorders incidental to the climate, and the treatment of ulcerations caused by the wounds of the mosquitoes and leeches, the native Singhalese have a deservedly high reputation; but their practice, when it depends on specifics, is too empirical to be safely relied on; and their traditional skill, though boasting a well authenticated antiquity, achieves few triumphs in competition with the soberer discipline of European science.

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[1] "It is worthy of remark, that although all the troops in Ceylon have occasionally, but at rare intervals, suffered severely from cholera, the disease has in very few instances attacked the officers, or indeed Europeans in the same grade of life. This is one important difference to be borne in mind when estimating the comparative risk of life in India and Ceylon. It must be due to the difference in comforts and quarters, or more particularly to the exemption from night duty, by far the most trying of the soldiers' hardships. The small mortality amongst the officers of European regiments in Ceylon is very remarkable."—*Note* by Dr. CAMERON, Army Med. Staff.

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CHAP. III.

VEGETATION. — TREES AND PLANTS.

ALTHOUGH the luxuriant vegetation of Ceylon has at all times been the theme of enthusiastic admiration, its flora does not probably exceed 3000 phænogamic plants[1]; and notwithstanding that it has a number of endemic species, and a few genera, which are not found on the great Indian peninsula, still its botanical features may be described as those characteristic of the southern regions of Hindustan and the Dekkan. The result of some recent experiments has, however, afforded a curious confirmation of the opinion ventured by Dr. Gardner, that, regarding its botany, geographically, Ceylon exhibits more of the Malayan flora and that of the Eastern Archipelago, than any portion of India to the west of it. Two plants peculiar to Malacca, the nutmeg and the mangustin, have been attempted, but unsuccessfully, to be cultivated in Bengal; but in Ceylon the former has been reared near Colombo with such singular success that its produce now begins to figure in the exports of the island; — and mangustins, which, ten years ago, were exhibited as

[1] The prolific vegetation of the island is likely to cause exaggeration in the estimate of its variety. Dr. Gardner, shortly after his appointment as superintendent of the Botanic Garden at Kandy, in writing to Sir W. Hooker, conjectured that the Ceylon flora might extend to 4000 or 5000 species. But from a recent *Report* of the present curator, Mr. Thwaites, it appears that the indigenous phænogamic plants discovered up to August, 1856, was 2670; of which 2025 were dicotyledonous, and 644 monocotyledonous flowering plants, besides 247 ferns and lycopods. When it is considered that this is nearly double the indigenous flora of England, and little under *one thirtieth* of the entire number of plants hitherto described over the world, the botanical richness of Ceylon, in proportion to its area, must be regarded as equal to that of any portion of the globe.

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curiosities from a single tree in the old Botanic Garden at Colombo, are found to thrive readily, and occasionally appear at table, rivalling in their wonderful delicacy of flavour those which have heretofore been regarded as peculiar to the Straits.

Up to the present time the botany of Ceylon has been imperfectly submitted to scientific scrutiny. Linnæus, in 1747, prepared his *Flora Zeylanica*, from specimens collected by Hermann, which had previously constituted the materials of the *Thesaurus Zeylanicus* of Burman and now form part of the herbarium in the British Museum. A succession of industrious explorers have been since engaged in following up the investigation[1]; but, with the exception of an imperfect and unsatisfactory catalogue by Moon, no enumeration of Ceylon plants has yet been published. Dr. Gardner had made some progress with a Singhalese Flora, when his death took place in 1849, an event which threw the task on other hands, and has postponed its completion for years.[2]

From the identity of position and climate, and the apparent similarity of soil between Ceylon and the southern extremity of the Indian peninsula, a corresponding agreement might be expected between their vegetable productions: and accordingly in its aspects and subdivisions Ceylon participates in those distinctive features which the monsoons have imparted respectively to the opposite shores of Hindustan. The western coast

[1] Amongst the collections of Ceylon plants deposited in the Hookerian Herbarium, are those made by General and Mrs. Walker, by Major Champion (who left the island in 1848), and by Mr. Thwaites, who succeeded Dr. Gardner in charge of the Royal Botanic Gardens at Kandy. Moon, who had previously held that appointment, left extensive collections in the herbarium at Peradenia, which have been largely increased by his successors; and Macrae, who was employed by the Horticultural Society of London, has enriched their museum with Ceylon plants. Some admirable letters of Mrs. Walker are printed in HOOKER's *Companion to the Botanical Magazine*. They include an excellent account of the vegetation of Ceylon.

[2] Dr. Gardner, in 1848, drew up a short paper containing *Some Remarks on the Flora of Ceylon*, which was printed in the appendix to LEE's *Translation of Ribeyro*; to this essay, and to his personal communications during frequent journeys, I am indebted for many facts incorporated in the following pages.

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being exposed to the milder influence of the south-west wind, shows luxuriant vegetation, the result of its humid and temperate climate; whilst the eastern, like Coromandel, has a comparatively dry and arid aspect, produced by the hot winds which blow for half the year. The littoral vegetation of the seaborde exhibits little variation from that common throughout the Eastern archipelago; but it wants the *Phœnix paludosa*[1], a dwarf

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[1] DRS. HOOKER and THOMSON, in their *Introductory Essay to the Flora of India*, speaking of Ceylon, state that the *Nipa fruticans* (another characteristic palm of the Gangetic delta) and *Cycads* are also wanting there, but both these exist (the former abundantly), though perhaps not alluded to in any work on Ceylon botany to which those authors had access. In connection with this subject it may be mentioned, as a fact which is much to be regretted, that, although botanists have been appointed to the superintendence of the Botanic Gardens at Kandy, information regarding the vegetation of the island is scarcely obtainable without extreme trouble and reference to papers scattered through innumerable periodicals. That the majority of Ceylon plants are already known to science is owing to the coincidence of their being also natives of India, whence they have been described; but there has been no recent attempt on the part of colonial or European botanists even to throw into a useful form the already published descriptions of the commoner plants of the island. Such a work would be the first step to a Singhalese Flora. The preparation of such a compendium would seem to belong to the duties of the colonial botanist, and as such it was an object of especial solicitude to the late superintendent, Dr. Gardner. But the heterogeneous duties imposed upon the person holding his office (the evils arising from which are elsewhere alluded to,) have hitherto been insuperable obstacles to the attainment of this object, as they have also been to the preparation of a systematic account of the general features of Ceylon vegetation. Such a work is strongly felt to be a desideratum by numbers of intelligent persons in Ceylon, who are not accomplished botanists, but who are anxious to acquire accurate ideas as to the aspects of the flora at different elevations, different seasons, and different quarters of the island; of the kinds of plants that chiefly contribute to the vegetation of the coasts, the plains, and mountains; of the general relations that subsist between them and the flora of the Carnatic, Malabar, and the Malay archipelago; and of the more useful plants in science, arts, medicine, and commerce.

To render such a work (however elementary) at once accurate as well as interesting, would require sound scientific knowledge; and, however skilfully and popularly written, there would still be portions somewhat difficult of comprehension to the ordinary reader; but curiosity would be stimulated by the very occurrence of difficulty, and thus an impulse might be given to the acquisition of rudimentary botany, which would eventually enable the inquirer to contribute his quota to the natural history of Ceylon.

P. S. Since the foregoing passage was written, Mr. Thwaites has announced the early publication of a new work on Ceylon plants, to be entitled *Enumeratio Plantarum Zeylaniæ; with Descriptions of the new and little known genera and species;* and observations on their habits, uses,

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date-palm, which literally covers the islands of the Sunderbunds at the delta of the Ganges. A dense growth of mangroves[1] occupies the shore, beneath whose overarching roots the ripple of the sea washes unseen over the muddy beach.

Retiring from the strand, there are groups of *Sonneratia*[2], *Avicennia*, *Heritiera*, and *Pandanus;* the latter with a stem like a dwarf palm, round which the serrated leaves ascend in spiral convolutions till they terminate in a pendulous crown, from which drop the amber clusters of beautiful but uneatable fruit, with a close resemblance in shape and colour to that of the pine-apple, from which, and from the peculiar arrangement of the leaves, the plant has acquired its name of the Screw-pine.

&c. In the identification of the species Mr. Thwaites is to be assisted by Dr. Hooker, F.R.S.; and from their conjoint labours we may at last hope for a production worthy of the subject.

[1] Rhizophora Candelaria, Kandelia Rheedei, Bruguiera gymnorhiza.

[2] At a meeting of the Entomological Society in 1842, Dr. Templeton sent, for the use of the members, many thin slices of substance to replace cork-wood as a lining for insect cases and drawers. Along with the soft wood he sent the following notice:—"In this country (he writes from Colombo, Ceylon, May 19, 1842), along the marshy banks of the large rivers, grows a very large handsome tree, named *Sonneratia acida* by the younger Linnæus; its roots spread far and wide through the soft moist earth, and at various distances along send up most extraordinary long spindle-shaped excrescences four or five feet above the surface. Of these Sir James Edward Smith remarks, 'what those horn-shaped excrescences are which occupy the soil at some distance from the base of the tree, from a span to a foot in length and of a corky substance, as described by Rumphius, we can offer no conjecture.' Most curious things (remarks Dr. Templeton) they are; they all spring very narrow from the root, expand as they rise, and then become gradually attenuated, occasionally forking, but never throwing out shoots or leaves, or in any respect resembling the parent root or wood. They are firm and close in their texture, nearly devoid of fibrous structure, and take a moderate polish when cut with a sharp instrument; but for lining insect boxes and making setting-boards they have no equal in the world. The finest pin passes in with delightful ease and smoothness, and is held firmly and tightly so that there is no risk of the insects becoming disengaged. With a fine saw I form them into little boards and then smooth them with a sharp case knife, but the London veneering-mills would turn them out fit for immediate use, without any necessity for more than a touch of fine glass-paper. Some of my pigmy boards are two feet long by three and a half inches wide, which is more than sufficient for our purpose, and to me they have proved a vast acquisition. The natives call them 'Kirilimow,' the latter syllable signifying root."—TEMPLETON, *Trans. Ent. Soc.* vol. iii. p. 302.

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A little further inland, the sandy plains are covered by a thorny jungle, the plants of which are the same as those of the Carnatic, the climate being alike; and wherever man has encroached on the solitude, groves of coco-nut palms mark the vicinity of his habitations.

Remote from the sea, the level country of the north has a flora almost identical with that of Coromandel; but the arid nature of the Ceylon soil, and its drier atmosphere, is attested by the greater proportion of euphorbias and fleshy shrubs, as well as by the wiry and stunted nature of the trees, their smaller leaves and thorny stems and branches.[1]

Conspicuous amongst them are acacias of many kinds: *Cassia fistula*, the wood apple (*Feronia elephantum*), and the mustard tree of Scripture (*Salvadora Persica*), which extends from Ceylon to the Holy Land. The margosa (*Azadirachta Indica*), the satin wood, the Ceylon oak, and the tamarind and ebony, are examples of the larger trees; and in the extreme north and west the Palmyra palm takes the place of the coco-nut, and not only lines the shore, but fills the landscape on every side with its shady and prolific groves.

Proceeding southward on the western coast, the acacias disappear, and the greater profusion of vegetation, the taller growth of the timber, and the darker tinge of the foliage, all attest the influence of the increased moisture both from the rivers and the rains. The brilliant *Ixoras*, *Erythrinas*, *Buteas*, *Jonesias*, *Hibiscus*, and a variety of flowering shrubs of similar beauty, enliven the forests with their splendour; and the seeds of the cinnamon, carried by the birds from the cultivated gardens near the coasts, have germinated in the sandy soil, and diversify the woods with the fresh verdure of its polished leaves and delicately-tinted shoots. It is to be found universally to a considerable height in the lower range of hills, and thither the Chalias were

[1] Dr. Gardner.

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accustomed to resort to cut and peel it, a task which was imposed on them as a feudal service by the native sovereign, who paid an annual tribute in prepared cinnamon to the Dutch, and to the present time this branch of the trade in the article continues, but divested of its compulsory character.

The Dutch, in like manner, maintained, during the entire period of their rule, an extensive commerce in pepper worts, which still festoon the forest, but the export has almost ceased from Ceylon. Along with these the trunks of the larger trees are profusely covered with other delicate creepers, chiefly Convolvuli and Ipomœas; and the pitcher-plant (*Nepenthes distillatoria*) lures the passer-by to halt and conjecture the probable uses of the curious mechanism, by means of which it distils a quantity of limpid fluid into the vegetable vases at the extremity of its leaves. The Orchideæ suspend their pendulous flowers from the angles of branches, whilst the bare roots and the lower part of the stem are occasionally covered with fungi of the most gaudy colours, bright red, yellow, and purple.

Of the east side of the island the botany has never yet been examined by any scientific resident, but the productions of the hill country have been largely explored, and present features altogether distinct from those of the plains. For the first two or three thousand feet the dissimilarity is less perceptible to an unscientific eye, but as we ascend the difference becomes apparent in the larger size of the leaves, and the nearly uniform colour of the foliage, except where the scarlet shoots of the ironwood tree (*Mesua ferrea*) seem like flowers in their blood-red hue. Here the broad leaves of the wild plantains (*Musa textilis*) penetrate the soil among the broken rocks; and in moist spots the graceful bamboo flourishes in groups, whose feathery foliage waves like the plumes of the ostrich.[1] It is at these elevations that

[1] In the Malayan peninsula the bamboo has been converted into an instrument of natural music, by perforating it with holes, through which

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the sameness of the scenery is diversified by the grassy patenas before alluded to[1], which, in their aspect, though not their extent, may be called the Savannahs of Ceylon. Here peaches, cherries, and other European fruit trees, grow freely; but they become evergreens in this summer climate, and exhausted by perennial excitement, and deprived of their winter repose, they refuse to ripen their fruit.[2] A similar failure was discovered in some European vines, which were cultivated at Jaffna; but Mr. Dyke, the government agent, in whose garden they grew, conceiving that the activity of the plants might be equally checked by exposing them to an extreme of warmth, as by subjecting them to cold, tried, with perfect success, the experiment of laying bare the roots in the strongest heat of the sun. The result verified his conjecture. The circulation of the sap was arrested, the vines obtained the needful repose, and the grapes, which before had fallen almost unformed from the tree, are now brought to thorough maturity, though inferior in flavour to those produced at home.[3]

The tea plant has been raised with entire success in the hills on the estate of the Messrs. Worms, at Roth-

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the wind is permitted to sigh; and the effect is described as perfectly charming. Mr. Logan, who in 1847 visited Naning, contiguous to the frontier of the European settlement of Malacca, on approaching the village of Kándáng, was surprised by hearing "the most melodious sounds, some soft and liquid like the notes of a flute, and others deep and full like the tones of an organ. They were sometimes low, interrupted, or even single, and presently they would swell into a grand burst of mingled melody. On drawing near to a clump of trees, above the branches of which waved a slender bamboo about forty feet in length, he found that the musical tones issued from it, and were caused by the breeze passing through perforations in the stem; the instrument thus formed is called by the natives the *bulu perindu*, or plaintive bamboo." Those which Mr. Logan saw had a slit in each joint, so that each stem possessed fourteen or twenty notes.

[1] See *ante*, p. 24.

[2] The apple-tree in the Peradenia Gardens seems not only to have become an evergreen, but to have changed its character in another particular; for it is found to send out numerous runners under ground, which continually rise into small stems and form a growth of shrub-like plants around the parent tree.

[3] An equally successful experiment, to give the vine an artificial winter by baring the roots, is recorded by Mr. BALLARD, of Bombay, in the *Transactions of the Agric. and Hortic. Society of India*, under date 24th May, 1824. Calcutta, 1850. Vol. i. p. 96.

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schild, in Pusilawa[1]; but the want of any skilful manipulators to collect and prepare the leaves, renders it hopeless to attempt any experiment on a large scale, until assistance can be secured from China, to conduct the preparation.

Still ascending, at an elevation of 6500 feet, as we approach the mountain plateau of Neuera-ellia, the dimensions of the trees again diminish, the stems and branches are covered with orchideæ and mosses, and around them spring up herbaceous plants and balsams, with here and there broad expanses covered with *Acanthaceæ*, whose seeds are the favourite food of the jungle fowl, which are always in perfection during the ripening of the Nilloo.[2] It is in these regions that the tree-ferns (*Alsophila gigantea*) rise from the damp hollows, and carry their gracefully plumed heads sometimes to the height of twenty feet.

At length in the loftiest range of the hills the Rhododendrons are discovered; no longer delicate bushes, as in Europe, but timber trees of considerable height, and corresponding dimensions, and every branch covered with a blaze of crimson flowers. In these forests are also to be met with some species of *Michelia*, the Indian representatives of the Magnolias of North America, several arboreous *myrtaceæ* and *ternstromiaceæ*, the most common of which is the camelia-like *Gordonia Ceylanica.*[3] These and *Vaccinia*, *Gaultheria*, *Symploci*, *Goughia*, and *Gomphandra*, establish

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[1] The cultivation of tea was attempted by the Dutch, but without success.

[2] There are said to be fourteen species of the Nilloo (Strobilanthes) in Ceylon. They form a complete under-growth in the forest five or six feet in height, and sometimes extending for miles. When in bloom, their red and blue flowers are a singularly beautiful feature in the landscape, and are eagerly searched by the honey bees. Some species are said to flower only once in five, seven, or nine years; and after ripening their seed they die. This is one reason assigned for the sudden appearance of the rats, which have been elsewhere alluded to as invading the coffee estates, when deprived of their ordinary food by the decay of the nilloo.

[3] Dr. Gardner.

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the affinity between the vegetation of this region and that of the Malabar ranges, the Khasia and Lower Himalaya.[1]

Generally speaking, the timber on the high mountains is of little value for œconomic purposes. Though of considerable dimensions, it is too unsubstantial to be serviceable for building or domestic uses; and perhaps, it may be regarded as an evidence of its perishable nature, that dead timber is rarely to be seen in any quantity encumbering the ground, in the heart of the deepest forests. It seems to go to dust almost immediately after its fall, and although the process of destruction is infinitely accelerated by the ravages of insects, especially the white ants (*termites*) and beetles, which instantly seize on every fallen branch: still, one would expect that the harder woods would, more or less, resist their attacks till natural decomposition should have facilitated their operations, and would thus exhibit more leisurely the progress of decay. But here decay is comparatively instantaneous, and it is seldom that fallen timber is to be found, except in the last stage of conversion into dust.

Some of the trees in the higher ranges are remarkable for the prodigious height to which they struggle upwards towards the air and light from the dense jungle; and one of the most curious of nature's devices, is the singular expedient by which some families of these very tall and top-heavy trees throw out buttresses like walls of wood, to support themselves from beneath. Five or six of these buttresses project like rays from all sides of the trunk: they are from six to twelve inches thick, and advance from five to fifteen feet outward; and as they ascend, gradually sink into the bole and disappear at the height of from ten to twenty feet from the ground. By the firm resistance which they offer below, the trees

[1] *Introduction to the Flora Indica* of Dr. HOOKER and Dr. THOMSON, p. 120. London, 1855.

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are effectually steadied, and protected from the leverage of the crown, by which they would otherwise be uprooted. Some of these buttresses are so smooth and flat, as almost to resemble sawn planks.

The greatest ornaments of the forest in these higher regions are the large flowering trees; the most striking of which is the Rhododendron, which in Ceylon forms a forest in the mountains, and when covered with flowers, it seems from a distance as though the hills were strewn with vermilion. This is the principal tree on the summit of Adam's Peak, and grows to the foot of the rock on which rests the little temple that covers the sacred footstep on its crest. Dr. Hooker states that the honey of its flowers is believed to be poisonous in some parts of Sikkim; but I never heard it so regarded in Ceylon.

One of the most magnificent of the flowering trees, is the Coral tree[1], which is also the most familiar to Europeans, as the natives of the low country and the coast, from the circumstance of its stem being covered with thorns, plant it largely for fences, and grow it in the vicinity of their dwellings. It derives its English name from the resemblance which its scarlet flowers present to red coral, and as these clothe the branches before the leaves appear, their splendour attracts the eye from a distance, especially when lighted by the full blaze of the sun.

The Murutu[2] is another flowering tree which may vie with the Coral, the Rhododendron, or the Asoca, the favourite of Sanskrit poetry. It grows to a considerable height, especially in damp places and the neighbourhood of streams, and pains have been taken,

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[1] *Erythrina Indica.* It belongs to the pea tribe, and must not be confounded with the *Jatropha multifida*, which has also acquired the name of the *coral tree*. Its wood is so light and spongy, that it is used in Ceylon to form corks for preserve jars; and both there and at Madras the natives make from it models of their implements of husbandry, and of their sailing boats and canoes.

[2] Lagerstrœmia Reginæ.

from appreciation of its attractions, to plant it by the road side and in other conspicuous positions. From the points of the branches panicles are produced, two or three feet in length, composed of flowers, each the size of a rose and of all shades, from a delicate pink to the deepest purple. It abounds in the south-west of the island.

The magnificent Asoca[1] is found in the interior, and is cultivated, though not successfully, in the Peradenia Garden, and in that attached to Elie House at Colombo. But in Toompane, and in the valley of Doombera, its loveliness vindicates all the praises bestowed on it by the poets of the East. Its orange and crimson flowers grow in graceful racemes, and the Singhalese, who have given the rhododendron the pre-eminent appellation of the "great red flower," (*maha-rat-mal*,) have called the Asoca the *diya-rat-mal* to indicate its partiality for "moisture," combined with its prevailing hue.

But the tree which will most frequently attract the eye of the traveller, is the kattoo-imbul of the Singhalese[2], one of which produces the silky cotton which, though incapable of being spun, owing to the shortness of its delicate fibre, makes the most luxurious stuffing for sofas and pillows. It is a tall tree covered with formidable thorns; and being deciduous, the fresh leaves, like those of the coral tree, do not make their appearance till after the crimson flowers have covered the branches with their bright tulip-like petals. So profuse are these gorgeous flowers, that when they fall, the ground for many roods on all sides is a carpet of scarlet. They are succeeded by large oblong pods, in which the black polished seeds are deeply embedded in the floss which is so much prized by the natives. The trunk is of an unusually bright green colour, and the

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[1] Jonesia Asoca.

[2] *Bombax Malabaricus.* As the genus Bombax is confined to tropical America, the German botanists, Schott and Endlicher, have assigned to the imbul its ancient Sanskrit name, and described it as *Salmalia Malabarica.*

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branches issue horizontally from the stem, in whorls of threes with a distance of six or seven feet between each whorl.

Near every Buddhist temple the priests plant the Iron tree (*Mesua ferrea*)[1] for the sake of its flowers, with which they decorate the images of Buddha. They resemble white roses, and form a singular contrast with the buds and shoots of the tree, which are of the deepest crimson. Along with its flowers the priests use likewise those of the Champac (*Michelia Champaca*,) belonging to the family of magnoliaceæ. They have a pale yellow tint, with the sweet oppressive perfume which is celebrated in the poetry of the Hindus. From the wood of the champac the images of Buddha are carved for the temples.

The celebrated Upas tree of Java (*Antiaris toxicaria*,) which has been the subject of so many romances, exploded by Dr. Horsfield[2], was supposed by Dr. Gardner to exist in Ceylon, but more recent scrutiny has shown that what he mistook for it, was an allied species, the *A. saccidora*, which grows at Kornegalle, and in other parts of the island; and is scarcely less remarkable, though for very different characteristics. The Ceylon species was first brought to public notice by E. Rawdon Power, Esq., government agent of the Kandyan province, who sent specimens of it, and of the sacks which it furnishes, to the branch of the Asiatic Society at Colombo. It is known to the Singhalese by the name of "riti-gaha," and is identical with the *Lepurandra saccidora*, from which the natives of Coorg, like those of Ceylon,

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[1] Dr. Gardner supposed the iron-wood tree of Ceylon to have been confounded with the *Messua ferrea* of Linnæus. He asserted it to be a distinct species, and assigned to it the well-known Singhalese name "*na-gaha*" or *iron-wood tree*. But this conjecture has since proved erroneous.

[2] The vegetable poisons, the use of which is ascribed to the Singhalese, are chiefly the seeds of the *Datura*, which act as a powerful narcotic, and those of the *Croton tiglium*, the excessive effect of which ends in death. The root of the *Nerium odorum* is equally fatal, as is likewise the exquisitely beautiful *Gloriosa superba*, whose brilliant flowers festoon the jungle in the plains of the low country. See Bennett's account of the *Antiaris*, in Horsfield's *Plantæ Javanicæ*.

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manufacture an ingenious substitute for sacks by a process which is described by Mr. Nimmo.[1] "A branch is cut corresponding to the length and breadth of the bag required, it is soaked and then beaten with clubs till the liber separates from the timber. This done, the sack which is thus formed out of the bark is turned inside out, and drawn downwards to permit the wood to be sawn off, leaving a portion to form the bottom which is kept firmly in its place by the natural attachment of the bark."

As we descend the hills the banyans[2] and a variety of figs make their appearance. They are the thugs of the vegetable world, for although not necessarily epiphytic, it may be said that in point of fact no single plant comes to perfection, or acquires even partial development, without the destruction of some other on which to fix itself as its supporter. The family generally make their first appearance as slender roots hanging from the crown or trunk of some other tree, generally a palm, among the moist bases of whose leaves the seed carried thither by some bird which had fed upon the fig, begins to germinate. This root branching as it descends, envelopes the trunk of the supporting tree with a network of wood, and at length penetrating the ground, attains the dimensions of a stem. But unlike a *stem* it throws out no buds, leaves, or flowers; the true stem, with its branches, its foliage, and fruit, springs upwards from the crown of the tree whence the root is seen descending; and from it issue the pendulous rootlets, which, on reaching the earth, fix themselves firmly and form the marvellous growth for which the banyan is so celebrated.[3] In the

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[1] Catalogue of Bombay Plants, p. 193. The process in Ceylon is thus described in Sir W. HOOKER's *Report on the Vegetable Products* exhibited in Paris in 1855: "The trees chosen for the purpose measure above a foot in diameter. The felled trunks are cut into lengths, and the bark is well beaten with a stone or a club till the parenchymatous part comes off, leaving only the inner bark attached to the wood; which is thus easily drawn out by the hand. The bark thus obtained is fibrous and tough, resembling a woven fabric: it is sewn at one end into a sack, which is filled with sand, and dried in the sun."

[2] Ficus Indica.

[3] I do not remember to have seen

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depth of this grove, the original tree is incarcerated till, literally strangled by the folds and weight of its resistless companion, it dies and leaves the fig in undisturbed possession of its place. It is not unusual in the forest to

MARRIAGE OF THE FIG-TREE AND THE PALM.

find a fig-tree which had been thus upborne till it became a standard, now forming a hollow cylinder, the centre of which was once filled by the sustaining tree: but the empty walls form a circular network of interlaced roots and branches; firmly agglutinated under pressure, and admitting the light through interstices that look like loopholes in a turret.

Another species of the same genus, *F. repens*, is a fitting representative of the English ivy, and is constantly to be seen clambering over rocks, turning

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the following passage from Pliny referred to as the original of Milton's description of this marvellous tree:—

"Ipsa se serens, vastis diffunditur ramis: quorum imi adeo in terram curvantur, ut annuo spatio infigantur, novamque sibi *propaginem faciant circa parentem in orbem.* Intra septem eam *æstivant pastores,* opacam pariter et munitam vallo arboris, decora specie subter intuenti, proculve, *fornicato* arbore. Foliorum latitudo *peltæ effigiem Amazonicæ* habet," &c. —PLINY, l. xii. c. 11.

"The fig-tree—not that kind for fruit renowned,
But such as at this day to Indians known,
In Malabar or Dekkan spreads her arms,
Branching so broad and long, that on the ground
The bended twigs take root, and *daughters grow*
About the mother tree: a *pillar'd* shade
High over arched and echoing walks between.
There oft the Indian herdsman, shunning heat,
Shelters in cool and *tends his pasturing flocks*
At loop-holes cut through thickest shade. These leaves
They gathered; broad as *Amazonian targe:*
And with what skill they had, together sewed
To gird their waist," &c.
Par. Lost, ix. 1100.

Pliny's description is borrowed, with some embellishments, from THEOPHRASTUS *de Nat. Plant.* l. i. 7, iv. 4.

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through heaps of stones, or ascending some tall tree to the height of thirty or forty feet, while the thickness of its own stem does not exceed a quarter of an inch.

The facility with which the seeds of the fig-tree take root where there is a sufficiency of moisture to permit of germination, has rendered them formidable assailants of the ancient monuments throughout Ceylon. The vast mounds of brickwork which constitute the remains of the Dagobas at Anarajapoora and Pollanarrua are covered densely with trees, among which the figs are always conspicuous. One, which has fixed itself on the walls of a ruined edifice at the latter city, forms one of the most remarkable objects of the place—its roots streaming downwards over the walls as if they had once been fluid, follow every sinuosity of the building and terraces till they reach the earth.

A FIG-TREE ON THE RUINS AT POLLANARRUA.

To this genus belongs the Sacred Bo-tree of the Buddhists, *Ficus religiosa*, which is planted close to every temple, and attracts almost as much veneration as the

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statue of the god himself. At Anarajapoora is still preserved the identical tree said to have been planted 288 years before the Christian era.[1]

Although the India-rubber tree (*F. elastica*) is not indigenous to Ceylon, it is now very widely diffused over the island. It is remarkable for the pink leathery covering which envelopes the leaves before expansion, and for the delicate tracing of the nerves which run in equi-distant rows at right angles from the mid-rib. But its most striking feature is the exposure of its roots, masses of which appear above ground, extending on all

THE SNAKE-TREE.

sides from the base, and writhing over the surface in undulations—

> "Like snakes in wild festoon,
> In ramous wrestlings interlaced,
> A forest Laocoon."[2]

So strong, in fact, is the resemblance, that the villagers give it the name of the "Snake-tree." One, which grows close to Cotta, at the Church Missionary establishment within a few miles of Colombo, affords a remarkable illustration of this peculiarity.

There is an avenue of these trees leading to the Gardens of Peradenia, the roots of which meet from either side of the road, and have so covered the surface by their agglutinated reticulations as to form a wooden

[1] For a memoir of this celebrated tree, see the account of Anarajapoora, Vol. II. p. 10.

[2] HOOD's poem of *The Elm Tree.*

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framework, the interstices of which retain the materials that form the roadway.[1]

The Kumbuk of the Singhalese (called by the Tamils Maratha-maram)[2] is one of the noblest and most widely distributed trees in the island; it delights in the banks of rivers and moist borders of tanks and canals; it overshadows the stream of the Mahawelli-ganga, almost from Kandy to the sea; and it stretches its great arms above the still water of the lakes on the eastern side of the island.

One venerable patriarch of this species, which grows at Mutwal, within three miles of Colombo, towers to so great a height above the surrounding forests of coco-nut palms, that it forms a landmark for the native boatmen, and is discernible from Negombo, more than twenty miles distant. The circumference of its stem, as measured by Mr. W. Ferguson, in 1850, was forty-five feet close to the earth, and seven yards at twelve feet above the ground.

The timber, which is durable, is applied to the carving of idols for the temples, besides being extensively used for less dignified purposes; but it is chiefly prized for the bark, which is sold as a medicine, and, in addition to yielding a black dye, it is so charged with calcareous matter that its ashes, when burnt, afford a substitute for the lime which the natives chew with their betel.

Some of the trees found in the forests of the interior are remarkable for the curious forms in which they produce their seeds. One of these, which sometimes grows to the height of one hundred feet without throwing out a single branch, has been confounded with the durian of the Eastern Archipelago, or supposed to be an allied species[3], but it differs from it in the important particular

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[1] Mr. Ferguson, of the Surveyor-General's Department, assures me that he once measured the root of a small wild fig-tree, growing in a patena at Hewahette, and found it upwards of 140 feet in length, whilst the tree itself was not 30 feet high.

[2] Pentaptera tomentosa (*Rox.*).

[3] It is the *Cullenia excelsa* of WIGHT's *Icones*, &c. (761-2).

that its fruit is not edible. The real durian is not indigenous to Ceylon, but was brought there by the Portuguese in the sixteenth century.[1] It has been very recently re-introduced, and is now cultivated successfully. The native name for the Singhalese tree, "Katu-bœda," denotes the prickles that cover its fruit, which is as large as a coco-nut, and set with thorns each nearly an inch in length.

The *Sterculia fœtida*, one of the finest and noblest of the Ceylon forest-trees, produces from the end of its branches large bunches of dark purple flowers of extreme richness and beauty; but emitting a stench so intolerable as richly to entitle it to its very characteristic botanical name. The fruit is equally remarkable, and consists of several crimson cases of the consistency of leather, within which are enclosed a number of black bean-like seeds, that are dispersed by the bursting of their envelope, which splits open to liberate them when sufficiently ripened.

The Moodilla (*Barringtonia speciosa*) is another tree which attracts the eye of the traveller, not less from the remarkably shaped fruit which it bears than for the contrast between its dark glossy leaves and the delicate flowers which they surround. The latter are white, tipped with crimson, but the petals drop off early, and the stamens, of which there are nearly a hundred to each flower, when they fall to the ground might almost be mistaken for painters' brushes. The tree (as its name implies) loves the shore of the sea, and its large quadrangular fruits, of pyramidal form, being protected by a hard fibrous covering, are tossed by the waves till they root themselves on the beach. It grows freely at the mouths of the principal rivers on the west

[1] Porcacchi, in his *Isolario*, written in the sixteenth century, enumerates the true durian as being then amongst the ordinary fruit of Ceylon.—"Vi nasce anchora un frutto detto Duriano, verde et grande come quei cocomeri che a Venetia son chiamati angurie: in mezo del quale trouano dentro cinque frutti de sapor molto excellente."—Lib. iii. p. 188. Padua, A.D. 1619.

coast, and several noble specimens of it are found near the fort of Colombo.

The Goda-kaduru, or *Strychnos nux-vomica*, is abundant in these prodigious forests, and has obtained an European celebrity from its producing the poisonous seeds from which strychnine is extracted. Its fruit, which it exhibits in great profusion, is of the size and colour of a small orange, within which a pulpy substance envelopes the seeds that form the "nux vomica" of commerce. It grows in great luxuriance in the vicinity of the ruined tanks throughout the Wanny, and on the west coast as far south as Negombo. It is singular that in this genus there should be found two plants, the seeds of one being not only harmless but wholesome, and that of the other the most formidable of known poisons.[1] Amongst the Malabar immigrants there is a belief that the seeds of the goda-kaduru, if habitually taken, will act as a prophylactic against the venom of the cobra de capello; and I have been assured that the coolies coming from the coast of India accustom themselves to eat a single seed per day in order to acquire the desired protection from the effects of this serpent's bite.[2]

In these forests the Euphorbia[3], which we are accustomed to see only as a cactus-like green-house plant, attains the size and strength of a small timber-tree; its quadrangular stem becomes circular and woody, and its square fleshy shoots take the form of branches, or rise with a rounded top as high as thirty feet.[4]

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[1] The *tettan-cotta*, the use of which is described in Vol. II. Pt. IX. ch. i., when applied by the natives to clarify muddy water, is the seed of another species of strychnos, *S. potatorum*. The Singhalese name is *ingini* (*tettan-cotta* is Tamil).

[2] In India, the distillers of arrack from the juice of the coco-nut palm are said, by Roxburgh, to introduce the seeds of the strychnus, in order to increase the intoxicating power of the spirit.

[3] E. Antiquorum.

[4] Amongst the remarkable plants of Ceylon, there is one concerning which a singular error has been perpetuated in botanical works from the time of Paul Hermann, who first described it in 1687, to the present. I mean the *kiri-anguna* (Gymnema lactiferum, evidently a form of the

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But that which arrests the attention even of an indifferent passer-by is the endless variety and almost inconceivable size and luxuriance of the *climbing plants and epiphytes* which live upon the forest trees in every part of the island. It is rare to see a single tree without its families of dependents of this description, and on one occasion I counted on a single prostrate stem no less than sixteen species of Capparis, Beaumontia, Bignonia, Ipomœa, and other genera, which, in its fall, it had brought along with it to the ground. Those which are free from climbing plants have their higher branches and hollows occupied by ferns and orchids, of which latter the variety is endless in Ceylon, though the beauty of their flower is not equal to those of Brazil and other tropical countries. In the many excursions which I made with Dr. Gardner he added numerous species to those already known, including the exquisite *Saccolabium guttatum*, which we came upon in the vicinity of Bintenne, but which had before been discovered in Java and the mountains of northern India. Its large groups of lilac flowers were hung in rich festoons from the branches as we rode under them, and caused us many an involuntary halt to admire and secure the plants.

G. sylvestre), to which has been given the name of the *Ceylon cow-tree;* and it is asserted that the natives drink its juice as we do milk. LOUDON (*Ency. of Plants*, p. 197) says, "The milk of the *G. lactiferum* is used instead of the vaccine ichor, and the leaves are employed in sauces in the room of cream." And LINDLEY, in his *Vegetable Kingdom*, in speaking of the Asclepiads, says, "the cow plant of Ceylon, 'kiri-anguna,' yields a milk of which the Singhalese make use for food, and its leaves are also used when boiled." Even in the *English Cyclopædia* of CHARLES KNIGHT, published so lately as 1854, this error is repeated. (See art. Cow-tree, p. 178.) But this is altogether a mistake;— the Ceylon plant, like many others, has acquired its epithet of *kiri*, not from the juices being susceptible of being used as a substitute for milk, but simply from its resemblance to it in colour and consistency. It is a creeper, found on the southern and western coasts, and used medicinally by the natives, but never as an article of food. The leaves, when chopped and boiled, are administered to nurses by native practitioners, and are supposed to increase the secretion of milk. As to its use, as stated by Loudon, in lieu of the vaccine matter, it is altogether erroneous. MOON, in his *Catalogue of the Plants of Ceylon*, has accidentally mentioned the kiri-anguna twice, being misled by the Pali synonym "kiri-hangula": they are the same plant, though he has inserted them as different, p. 21.

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A rich harvest of botanical discovery still remains for the scientific explorer of the districts south and east of Adam's Peak, whence Dr. Gardner's successor, Mr. Thwaites, has already brought some remarkable species. Many of the Ceylon orchids, like those of South America, exhibit a grotesque similitude to various animals; and one, a *Dendrobium*, which the Singhalese cultivate in the palms near their dwelling, bears a name equivalent to the *White-pigeon flower*, from the resemblance which its clusters present to a group of those birds in miniature clinging to the stem with wings at rest.

But of this order the most exquisite plant I have seen is the *Anœctochilus setaceus*, a terrestrial orchid which is to be found about the moist roots of the forest trees, and has drawn the attention of even the apathetic Singhalese, among whom its singular beauty has won for it the popular name of the Wanna Raja, or "King of the Forest." It is common in humid and shady places a few miles removed from the sea-coast; its flowers have no particular attraction, but its leaves are perhaps the most exquisitely formed in the vegetable kingdom; their colour is dark velvet, approaching to black, and reticulated over all the surface with veins of ruddy gold.[1]

The branches of all the lower trees and brushwood are so densely covered with convolvuli, and similar delicate climbers of every colour, that frequently it is difficult to discover the tree which supports them, owing to the heaps of verdure under which it is concealed. One very curious creeper, which always catches the eye, is the square-stemmed vine[2], whose fleshy four-sided runners climb the

[1] There is another small orchid bearing a slight resemblance to the wanna raja, which is often found growing along with it, called by the Singhalese iri raja, or "striped king." Its leaves are somewhat bronzed, but they are longer and narrower than those of the wanna raja; and, as its Singhalese name implies, it has two white stripes running through the length of each. They are not of the same genus; the wanna raja being the only species of *Anœctochilus* yet found in Ceylon.

[2] Cissus edulis, *Dalz.*

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highest trees, and hang down in the most fantastic bunches. Its stem, like that of another plant of the same genus (the *Vitis Indica*), when freshly cut, yields a copious draught of pure tasteless fluid, and is eagerly sought after by elephants.

But it is the trees of older and loftier growth that exhibit the rank luxuriance of these wonderful epiphytes in the most striking manner. They are tormented by climbing plants of such extraordinary dimensions that many of them exceed in diameter the girth of a man; and these gigantic appendages are to be seen surmounting the tallest trees of the forest, grasping their stems in firm convolutions, and then flinging their monstrous tendrils over the larger limbs till they reach the top, whence they descend to the ground in huge festoons, and, after including another and another tree in their successive toils, they once more ascend to the summit, and wind the whole into a maze of living network as massy as if formed by the cable of a line-of-battle ship. When, by-and-by, the trees on which this singular fabric has become suspended give way under its weight, or sink by their own decay, the fallen trunk speedily disappears, whilst the convolutions of climbers continue to grow on, exhibiting one of the most marvellous and peculiar living mounds of confusion that it is possible to fancy. Frequently one of these creepers may be seen holding by one extremity the summit of a tall tree, and grasping with the other an object at some distance near the earth, between which it is strained as tight and straight as if hauled over a block. In all probability the young tendril had been originally fixed in this position by the wind, and retained in it till it had gained its maturity, where it has the appearance of having been artificially arranged as if to support a falling tree.

This peculiarity of tropical vegetation has been turned to profitable account by the Ceylon woodmen, employed by the European planters in felling forest

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trees, preparatory to the cultivation of coffee. In this craft they are singularly expert, and far surpass the Malabar coolies, who assist in the same operations. In steep and mountainous places where the trees have been thus lashed together by the interlacing climbers, the practice is to cut halfway through each stem in succession, till an area of some acres in extent is prepared for the final overthrow. Then severing some tall group on the eminence, and allowing it in its descent to precipitate itself on those below, the whole expanse is in one moment brought headlong to the ground; the falling timber forcing down those beneath it by its weight, and dragging those behind to which it is harnessed by its living attachments. The crash occasioned by this startling operation is so deafeningly loud, that it is audible for two or three miles in the clear and still atmosphere of the hills.

One monstrous creeping plant called by the Kandyans the Maha-pus-wael, or "Great hollow climber,"[1] has pods, some of which I have seen fully five feet long and six inches broad, with beautiful brown beans, so large that the natives hollow them out, and carry them as tinder-boxes.

Another climber of less dimensions[2], but greater luxuriance, haunts the jungle, and often reaches the tops of the highest trees, whence it suspends large bunches of its yellow flowers, and eventually produces clusters of prickly pods containing greyish-coloured seeds, the size of marbles, which are so strongly coated with silex, that they are said to strike fire like a flint.

One other curious climber is remarkable for the vigour and vitality of its vegetation, a faculty in which it equals, if it do not surpass, the banyan. This is the

[1] *Entada pursætha.* The same plant, when found in lower situations, where it wants the soil and moisture of the mountains, is so altered in appearance that the natives call it the "heen-puswael;" and even botanists have taken it for a distinct species. The beautiful mountain region of Pusilawa, now familiar as one of the finest coffee districts in Ceylon, in all probability takes its name from the giant bean, "Pus-waelawa."

[2] Guilandina Bonduc.

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Cocculus cordifolius, the "rasa-kinda" of the Singhalese, a medicinal plant which produces the *gulancha* of Bengal. It is largely cultivated in Ceylon, and when it has acquired the diameter of half an inch, it is not unusual for the natives to cut from the main stem a portion of from twenty to thirty feet in length, leaving the dissevered plant suspended from the branches of the tree which sustained it. The amputation naturally serves for a time to check its growth, but presently small rootlets, not thicker than a pack-thread, are seen shooting downwards from the wounded end; these swing in the wind till, reaching the ground, they attach themselves in the soil, and form new stems, which in turn, when sufficiently grown, are cut away and replaced by a subsequent growth. Such is its tenacity of life, that when the Singhalese wish to grow the *rasa-kindu*, they twist several yards of the stem into a coil of six or eight inches in diameter, and simply hang it on the branch of a tree, where it speedily puts forth its large heart-shaped leaves, and sends down its rootlets to the earth.

The ground too has its creepers, and some of them very curious. The most remarkable are the ratans, belonging to the Calamus genus of palms. Of these I have seen a specimen 250 feet long and an inch in diameter, without a single irregularity, and no appearance of foliage other than the bunch of feathery leaves at the extremity.

The strength of these slender plants is so extreme, that the natives employ them with striking success in the formation of bridges across the water-courses and ravines. One which crossed the falls of the Mahawelli-ganga, in the Kotmalie range of hills, was constructed with the scientific precision of an engineer's work. It was entirely composed of the plant, called by the natives the "Waywel," its extremities fastened to living trees, on the opposite sides of the ravine through which a furious and otherwise impassable mountain

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torrent thundered and fell from rock to rock with a descent of nearly 100 feet. The flooring of this aerial bridge consisted of short splints of wood, laid transversely, and bound in their places by thin strips of the Waywel itself. The whole structure vibrated and swayed with fearful ease, but the coolies traversed it though heavily laden; and the European, between whose estate and the high road it lay, rode over it daily without dismounting.

Another class of trees which excites the astonishment of an European, are those whose stems are protected, as high as cattle can reach, by thorns, which in the jungle attain a growth and size quite surprising. One species of palm[1], the *Caryota horrida*, often rises to a height of fifty feet, and has a coating of thorns for about six or eight feet from the ground, each about an inch in length, and so densely covering the stem that the bark is barely visible.

A climbing plant, the "Kudu-miris" of the Singhalese[2], very common in the hill jungles with a diameter of three or four inches, is thickly studded with knobs about half an inch high, and from the extremity of each a thorn protrudes, as large and sharp as the bill of a sparrow-hawk. It has been the custom of the Singhalese from time immemorial, to employ the thorny trees of their forests in the construction of defences against their enemies. The *Mahawanso* relates, that in the civil wars, in the reign of Prakrama-bahu in the twelfth century, the inhabitants of the southern portion of the island entrenched themselves against his forces behind moats filled with thorns.[3] And at an earlier period, during the contest of Dutugaimunu with Elala, the same authority states, that a town which he was about

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[1] This palm I have called a *Caryota* on the authority of Dr. GARDNER, and of MOON's *Catalogue;* but I have been informed by Dr. HOOKER and Mr. THWAITES that it is an *Areca.* The natives identify it with the Caryota, and call it the "katu-kittul."

[2] Toddalia aculeata.

[3] *Mahawanso,* ch. lxxiv.

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to attack was "surrounded on all sides by the thorny *Dadambo creeper* (probably Toddalia aculeata) within which was a triple line of fortifications, with one gate of difficult access."[1]

During the existence of the Kandyan kingdom as an independent state, before its conquest by the British, the frontier forests were so thickened and defended by dense plantations of these thorny palms and climbers at different points, as to exhibit a natural fortification impregnable to the feeble tribes on the other side, and at each pass which led to the level country, moveable gates, formed of the same formidable thorny beams, were suspended as an ample security against the incursions of the naked and timid lowlanders.[2]

The pasture grounds throughout the vicinity of Jaffna abound in a low shrub called the Buffaloe-thorn[3], the black twigs of which are beset at every joint by a pair of thorns, set opposite each other like the horns of an ox, as sharp as a needle, from two to three inches in length, and thicker at the base than the stem they grow on.

The *Acacia tomentosa* is of the same genus, with thorns so large as to be called the "*jungle-nail*" by Europeans. It is frequent in the woods of Jaffna and Manaar, where it bears the Tamil name of *Aani mulla*, or "elephant thorn." In some of these thorny plants, as in the *Phoberos Gærtneri*, *Thun.*,[4] the spines grow not singly, but in branching clusters, each point presenting a spike as sharp as a lancet; and where these formidable

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[1] *Mahawanso*, ch. xxv.

[2] The kings of Kandy maintained a regulation "that no one, on pain of death, should presume to cut a road through the forest wider than was sufficient for one person to pass."—WOLF's *Life and Adventures*, p. 308.

[3] *Acacia latronum.*

[4] Mr. Wm. Ferguson writes to me, "This is the famous *Katu-kurundu*, or 'thorny cinnamon,' of the Singhalese, figured and described by Gaertner as the *Limonia pusilla*, which, after a great deal of labour and research, I think I have identified as the *Phoberos macrophyllus* (W. and A. Prod. p. 30). Thunberg alludes to it (*Travels*, vol. iv.)—"Why the Singhalese have called it a cinnamon, I do not know, unless from some fancied similarity in its seeds to those of the cinnamon laurel."

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shrubs abound they render the forest absolutely impassable, even to the elephant and to animals of great size and force.

The family of trees which, from their singularity as well as their beauty, most attract the eye of the traveller in the forests of Ceylon, are the palms, which occur in rich profusion, although, of upwards of six hundred species which are found in other countries, not more than ten or twelve are indigenous to the island.[1] At the head of these is the coco-nut, every particle of whose substance, stem, leaves, and fruit, the Singhalese turn to so many accounts, that one of their favourite topics to a stranger is to enumerate the *hundred* uses to which they tell us this invaluable tree is applied.[2]

The most majestic and wonderful of the palm tribe is the *talpat* or *talipat*[3], the stem of which sometimes attains the height of 100 feet, and each of its enormous fan-like leaves, when laid upon the ground, will form a semicircle of 16 feet in diameter, and cover an area of nearly 200 superficial feet. The tree flowers but once, and dies; and

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[1] Mr. Thwaites has enumerated fifteen species (including the coco-nut, and excluding the *Nipa fruticans*, which more properly belongs to the family of screw pines): viz. Areca, 4; Caryota, 1; Calamus, 5; Borassus, 1; Corypha, 1; Phœnix, 2; Cocos, 1.

[2] The following are only a few of the countless uses of this invaluable tree. The *leaves*, for roofing, for mats, for baskets, torches or chules, fuel, brooms, fodder for cattle, manure. The *stem of the leaf*, for fences, for pingoes (or yokes) for carrying burthens on the shoulders, for fishing-rods, and innumerable domestic utensils. The *cabbage*, or cluster of unexpanded leaves, for pickles and preserves. The *sap*, for *toddy*, for distilling arrack, and for making vinegar, and sugar. The *unformed nut*, for medicine and sweetmeats. The *young nut* and its milk, for drinking, for dessert; the green husk for preserves. The *nut*, for eating, for curry, for milk, for cooking. The *oil*, for rheumatism, for anointing the hair, for soap, for candles, for light; and the *poonak*, or refuse of the nut after expressing the oil, for cattle and poultry. The *shell of the nut*, for drinking cups, charcoal, tooth-powder, spoons, medicine, hookahs, beads, bottles, and knife-handles. The *coir*, or fibre which envelopes the shell within the outer husk, for mattresses, cushions, ropes, cables, cordage, canvass, fishing-nets, fuel, brushes, oakum, and floor mats. The *trunk*, for rafters, laths, railing, boats, troughs, furniture, firewood; and when very young, the first shoots, or cabbage, as a vegetable for the table. The entire list, with a Singhlaese enthusiast, is an interminable narration of the virtues of his favourite tree.

[3] Corypha umbraculifera.

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the natives firmly believe that the bursting of the sheath, which contains a magazine of seeds, is accompanied by a loud explosion. The leaves alone are converted by the Singhalese to purposes of utility. Of them they form coverings for their houses, and portable tents of a rude but effective character; and on occasions of ceremony, each chief and headman on walking abroad is attended by a follower, who holds above his head an elaborately-ornamented fan, formed from a single leaf of the talpat.

But the most interesting use to which they are applied is as substitutes for paper, both for books and for ordinary purposes. In the preparation of *olas*, which is the term applied to them when so employed, the leaves are taken whilst still tender, and, after separating the central ribs, they are cut into strips and boiled in spring water. They are dried first in the shade, and afterwards in the sun, then made into rolls, and kept in store, or sent to the market for sale. Before they are fit for writing on they are subjected to a second process, called *madema*. A smooth log of areca-palm is tied horizontally between two trees, each ola is then damped, and a weight being attached to one end of it, it is drawn backwards and forwards by the other till the surface becomes perfectly smooth and polished; and during the process, as the moisture dries up, it is necessary to renew it till the effect is complete. The smoothing of a single ola will occupy from fifteen to twenty minutes.

The finest specimens in Ceylon are to be obtained at the Panselas, or Buddhist monasteries; they are known as *puskŏla*, and are prepared by the Samanera priests (novices) and the students, under the superintendence of the priests.

The raw leaves, when dried without any preparation, are called *karakŏla*, and, like the leaves of the palmyra, are used only for ordinary purposes by the Singhalese; but in the Tamil districts, where palmyras are abundant,

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and talpat palms rare, the leaves of the former are used for books as well as for letters.

The *palmyra*[1] is another invaluable palm, and one of the most beautiful of the family. It grows in such profusion over the north of Ceylon, and especially in the peninsula of Jaffna, as to form extensive forests, whence its timber is exported for rafters to all parts of the island, as well as to the opposite coast of India, where, though the palmyra grows luxuriantly, its wood, from local causes, is too soft and perishable to be used for any purpose requiring strength and durability, qualities which, in the palmyra of Ceylon, are pre-eminent. To the inhabitants of the northern provinces this invaluable tree is of the same importance as the coco-nut palm is to the natives of the south. Its fruit yields them food and oil; its juice "palm wine" and sugar; its stem is the chief material of their buildings; and its leaves, besides serving as roofs to their dwellings and fences to their farms, supply them with matting and baskets, with head-dresses and fans, and serve as a substitute for paper for their deeds and writings, and for the sacred books, which contain the traditions of their faith. It has been said with truth that a native of Jaffna, if he be contented with ordinary doors and mud walls, may build an entire house (as he wants neither nails nor iron work), with walls, roof, and covering from the Palmyra palm. From this same tree he may draw his wine, make his oil, kindle his fire, carry his water, store his food, cook his repast, and sweeten it, if he pleases; in fact, live from day to day dependent on his palmyra alone. Multitudes so live, and it may be safely asserted that this tree alone furnishes one-fourth the means of sustenance for the population of the northern provinces.

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[1] *Borassus flabelliformis.* For an account of the Palmyra, and its cultivation in the peninsula of Jaffna, see FERGUSON's monograph on the *Palmyra Palm of Ceylon*, Colombo, 1850.

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The Jaggery Palm[1], the *Kitool* of the Singhalese, is chiefly cultivated in the Kandyan hills for the sake of its sap, which is drawn, boiled down, and crystallised into a coarse brown sugar, in universal use amongst the inhabitants of the south and west of Ceylon, who also extract from its pith a farina scarcely inferior to sago. The black fibre of the leaf is twisted by the Rodiyas into ropes of considerable smoothness and tenacity. A single Kitool tree has been pointed out at Ambogammoa, which furnished the support of a Kandyan, his wife, and their children. A tree has been known to yield one hundred pints of toddy within twenty-four hours.

The *Areca*[2] *Palm* is the invariable feature of a native garden, being planted near the wells and watercourses, as it rejoices in moisture. Of all the tribe it is the most graceful and delicate, rising to the height of forty or fifty feet[3], without an inequality on its thin polished stem, which is dark green towards the top, and sustains a crown of feathery foliage, in the midst of which are clustered the astringent nuts for whose sake it is carefully tended.

The chewing of these nuts with lime and the leaf of the betel-pepper supplies to the people of Ceylon the same enjoyment which tobacco affords to the inhabitants of other countries; but its use is, if possible, more offensive, as the three articles, when combined, colour the saliva of so deep a red that the lips and teeth appear as if covered with blood. Yet, in spite of this disgusting accompaniment, men and women, old and young, from morning till night indulge in the repulsive luxury.[4]

It is seldom, however, that we find in semi-civilised

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[1] Caryota urens.

[2] A. catechu.

[3] Mr. Ferguson measured an areca at Caltura which was seventy-five feet high, and grew near a coco-nut which was upwards of ninety feet. Caltura is, however, remarkable for the growth and luxuriance of its vegetation.

[4] Dr. Elliot, of Colombo, has observed several cases of cancer in the cheek which, from its peculiar characteristics, he has designated the "betel-chewer's cancer."

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life habits universally prevailing which have not their origin, however ultimately they may be abused by excess, in some sense of utility. The Turk, when he adds to the oppressive warmth of the sun by enveloping his forehead in a cumbrous turban, or the Arab, when he increases the sultry heat by swathing his waist in a showy girdle, may appear to act on no other calculation than a willingness to sacrifice comfort to a love of display; but the custom in each instance is the result of precaution — in the former, because the head requires especial protection from sun-strokes; and in the latter, from the fact well known to the Greeks (εὔζωνοι Ἀχαιοὶ) that, in a warm climate, danger is to be apprehended from a sudden chill to that particular region of the stomach. In like manner, in the chewing of the areca-nut with its accompaniments of lime and betel, the native of Ceylon is unconsciously applying a specific corrective to the defective qualities of his daily food. Never eating flesh meat by any chance, seldom or never using milk, butter, poultry, or eggs, and tasting fish but occasionally (more rarely in the interior of the island,) the non-azotised elements abound in every article he consumes with the exception of the bread-fruit, the jak, and some varieties of beans. In their indolent and feeble stomachs these are liable to degenerate into flatulent and acrid products; but, apparently by instinct, the whole population have adopted a simple prophylactic. Every Singhalese carries in his waistcloth an ornamented box of silver or brass, according to his means, enclosing a smaller one to hold a portion of chunam (lime obtained by the calcination of shells) whilst the larger contains the nuts of the areca and a few fresh leaves of the betel-pepper. As inclination or habit impels, he scrapes down the nut, which abounds in catechu, and, rolling it up with a little of the lime in a betel-leaf, the whole is chewed, and finally swallowed, after provoking an extreme salivation. No medical prescription could be more judiciously compounded to effect the desired object

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than this practical combination of antacid, the tonic, and carminative.

The custom is so ancient in Ceylon and in India that the Arabs and Persians who resorted to Hindustan in the eighth and ninth centuries carried back the habit to their own country; and Massoudi, the traveller of Bagdad, who wrote the account of his voyages in A.D. 943, states that the chewing of betel prevailed along the southern coast of Arabia, and reached as far as Yemen and Mecca.[1] Ibn Batuta saw the betel plant at Zahfar A.D. 1332, and describes it accurately as trained like a vine over a trellis of reeds, or climbing the stems of the coco-nut palm.[2]

The leaves of the coca[3] supply the Indians of Bolivia and Peru with a stimulant, whose use is equivalent to that of the betel-pepper among the natives of Hindustan and the Eastern Archipelago. With an admixture of lime, they are chewed perseveringly; but, unlike the betel, the colour imparted by them to the saliva is greenish instead of red. It is curious, too, as a coincidence common to the humblest phases of semi-civilised life, that, in the absence of coined money, the leaves of the coca form a rude kind of currency in the Andes, as does the betel in some parts of Ceylon, and tobacco amongst the tribes of the south-west of Africa.[4]

Neither catechu nor its impure equivalent, "terra japonica," is prepared from the areca in Ceylon; but the nuts are exported in large quantities to the Maldive Islands and to India, the produce of which they excel both in astringency and size. The fibrous wood of the areca being at once straight, firm, and elastic, is employed for making the pingoes (yokes for the shoulders),

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[1] MASSOUDI, *Moroudj-al-Dzeheb*, as translated by REINAUD, *Mémoire sur l'Inde*, p. 230.

[2] *Voyages, &c.*, t. ii. p. 205.

[3] Erythroxylon coca.

[4] Tobacco was a currency in North America when Virginia was colonised in the early part of the 17th century; debts were contracted and paid in it, and in every ordinary transaction tobacco answered the purposes of coin.

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by means of which the Singhalese coolie, like the corresponding class among the ancient Egyptians and the Greeks, carries his burdens, dividing them into portions of equal weight, one of which is suspended from each end of the pingo. By a swaying motion communicated to them as he starts, his own movement is facilitated, whereas one unaccustomed to the work, by allowing the oscillation to become irregular, finds it almost impossible to proceed with a load of any considerable weight.[1]

Timber trees, either for export or domestic use, are not found in any abundance except in the low country, and here the facility of floating them to the sea, down the streams which intersect the eastern coast of the island, has given rise to an active trade at Batticaloa and Trincomalie. But, unfortunately, the indifference of the local officers entrusted with the issue of licences to fell, and the imperfect control exercised over the adventurers who embark in these speculations, has led to a destruction of trees quite disproportionate to the timber obtained, and utterly incompatible with the conservation of the valuable kinds. The East India Company have had occasion to deplore the loss of their teak forests by similar neglect and mismanagement; and it is to be hoped that, ere too late, the attention of the Ceylon Government may be so directed to this important subject as to lead to the appointment of competent foresters, under whose authority and superintendence the felling of timber may be carried on.

An interesting memoir on the timber trees of Ceylon has been prepared by a native officer at Colombo, Adrian Mendis, of Morootu, carpenter-moodliar to the Royal Engineers, in which he has enumerated upwards of ninety species, which, in various parts of the island, are employed either as timber or cabinet woods.[2] Of these, the jak,

[1] The natives of Tahiti use a yoke of the same form as the Singhalese *pingo*, but made from the wood of the *Hibiscus tiliaceus*. — Darwin, *Nat. Voy.* ch. xviii. p. 407. For a further account of the pingo see Vol. I. Part IV. ch. viii. p. 497.

[2] Mendis' List will be found appended to the *Ceylon Calendar* for 1854.

the Kangtal of Bengal (*Artocarpus integrifolia*), is, next to the coco-nut and Palmyra, by far the most valuable to the Singhalese; its fruit, which sometimes attains the weight of 50 lbs., supplying food for their table, its leaves fodder for their cattle, and its trunk timber for every conceivable purpose both economic and ornamental. The Jak tree, as well as the Del, or wild bread-fruit is indigenous to the forests on the coast and in the central provinces; but, although the latter is found in the vicinity of the villages, it does not appear to be an object of special cultivation. The Jak, on the contrary, is planted near every house, and forms the shade of every garden. Its wood, at first yellow, approaches the colour of mahogany after a little exposure to the air, and resembles it at all times in its grain and marking.

The Del (*Artocarpus pubescens*) affords a valuable timber, not only for architectural purposes, but for ship-building. It and the Halmalille[1] resembling but larger than the linden tree of England, to which it is closely allied, are the favourite building woods of the natives, and the latter is used for carts, casks, and all household purposes, as well as for the hulls of their boats, from the belief that it resists the attack of the marine worms, and that some unctuous property in the wood preserves the iron work from rust.[2]

The Teak (*Tectona grandis*), which is superior to all others, is not a native of this island, and although largely planted, has not been altogether successful. But the satin-wood[3], in point of size and durability, is by far the first of the timber trees of Ceylon. For days together we have ridden under its magnificent shade. All the forests around Batticaloa and Trincomalie, and as far north as Jaffna, are thickly set with this valuable tree. It grows to the height of a hundred feet, with a rugged

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[1] Berrya ammonilla.

[2] The Masula boats, which brave the formidable surf of Madras, are made of Halmalille, which is there called "Trincomalie wood," from the place of exportation.

[3] Chloroxylon Swietenia.

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grey bark, small white flowers, and polished leaves, with a somewhat unpleasant odour. Owing to the difficulty of carrying its heavy beams, the natives only cut it near the banks of the rivers, down which it is floated to the coast, whence large quantities are exported to every part of the colony. The richly-coloured and feathery logs are used for cabinet-work, and the more ordinary for building purposes, every house in the eastern province being floored and timbered with satin-wood.

Another useful tree, very common in Ceylon, is the Suria[1], with flowers so like those of a tulip that Europeans know it as the tulip tree. It loves the sea air and saline soils. It is planted all along the avenues and streets in the towns near the coast, where it is equally valued for its shade and the beauty of its yellow flowers, whilst its tough wood is used for carriage shafts and gun-stocks.

The forests to the east furnish the only valuable cabinet woods used in Ceylon, the chief of which is ebony[2], which grows in great abundance throughout all the flat country to the west of Trincomalie. It is a different species from the ebony of Mauritius[3], and excels it and all others in the evenness and intensity of its colour. The centre of the trunk is the only portion which furnishes the extremely black part which is the ebony of commerce; but the trees are of such magnitude that reduced logs of two feet in diameter, and varying from ten to fifteen feet in length, can readily be procured from the forests at Trincomalie.

There is another cabinet wood, of extreme beauty, called by the natives Cadooberia. It is a bastard species of ebony[4], in which the prevailing black is stained with stripes of rich brown, approaching to yellow and pink. But its density is inconsiderable, and in durability it is far inferior to that of true ebony.

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[1] Thespesia populnea.
[2] Diospyrus ebenum.
[3] D. reticulata.
[4] D. ebenaster.

The Calamander[1], the most valuable cabinet wood of the island, resembling rose-wood, but much surpassing it both in beauty and durability, has at all times been in the greatest repute in Ceylon. It grows chiefly in the southern provinces, and especially in the forests at the foot of Adam's Peak; but here it has been so prodigally felled, first by the Dutch, and afterwards by the English, without any precautions for planting or production, that it has at last become exceedingly rare. Wood of a large scantling is hardly procurable at any price; and it is only in a very few localities, the principal of which is Saffragam, in the western province, that even small sticks are now to be found; one reason assigned for this is that the heart of the tree is seldom sound, a peculiarity which extends to the Cadooberia.

The twisted portions, and especially the roots of the latter, yield veneers of unusual beauty, dark wavings and blotches, almost black, being gracefully disposed over a delicate fawn-coloured ground. Its density is so great (nearly 60 lbs. to a cubic foot) that it takes an exquisite polish, and is in every way adapted for the manufacture of furniture, in the ornamenting of which the native carpenters excel. The chiefs and headmen, with a full appreciation of its beauty, take particular pride in possessing specimens of this beautiful wood, roots of which they regard as most acceptable gifts.

Notwithstanding its value, the tree is nearly eradicated, and runs some risk of becoming extinct in the island; but, as it is not peculiar to Ceylon, it may be restored by fresh importations from the south-eastern coast of India, of which it is equally a native, and I apprehend that the name, *Calamander*, which was used by the Dutch, is but a corruption of "Coromandel."

Another species of cabinet wood is produced from the Nedun[2], a large tree common on the western coast; it

[1] D. hirsuta.

[2] Dalbergia lanceolaria.

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belongs to the Pea tribe, and is allied to the Sisso of India. Its wood, which is lighter than the "Blackwood" of Bombay, is used for similar purposes.

The Tamarind tree[1], and especially its fine roots, produce a variegated cabinet wood of much beauty, but of such extreme hardness as scarcely to be workable by any ordinary tools.[2]

As to fruit-trees, it is only on the coast, or near the large villages and towns, that they are found in any perfection. In the deepest jungle the sight of a single coco-nut towering above the other foliage is in Ceylon a never-failing landmark to intimate to a traveller his approach to a village. The natives have a superstition that the coco-nut will not grow *out of the sound of the human voice*, and will die if the village where it had previously thriven become deserted; the solution of the mystery being in all probability the superior care and manuring which its receives in such localities.[3] In the generality of the forest hamlets there are always to be found a few venerable Tamarind trees of patriarchal proportions, the ubiquitous Jak, with its huge fruits, weighing from 5 to 50 lbs. (the largest eatable fruit in the world), each springing from the rugged surface of the bark, and suspended by a powerful stalk, which attaches it to the trunk of the tree. Lime-trees, Oranges, and Shaddoks are carefully cultivated in these little gardens, and occasionally the Rose-apple and the Cachu-nut, the Pappaya, and invariably as plentiful a supply of Plantains as they find it prudent to raise without

[1] Tamarindus Indica.

[2] The natives of Western India have a belief that the shade of the tamarind tree is unhealthy, if not poisonous. But in Ceylon it is an object of the people, especially in the north of the island, to build their houses under it, from the conviction that of all trees its *shade is the coolest*. In this feeling, too, the Europeans are so far disposed to concur that it has been suggested whether there may not be something peculiar in the respiration of its leaves. The Singhalese have an idea that the twigs of the ranna-wara (*Cassia auriculata*) diffuse an agreeable coolness, and they pull them for the sake of enjoying it by holding them in their hands or applied to the head. In the south of Ceylon it is called the Matura tea-tree, its leaves being infused as a substitute for tea.

[3] See Vol. II. p. 125.

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inviting the visits of the wild elephants, with whom they are especial favourites.

These, and the Bilimbi and Guava, the latter of which is naturalised in the jungle around every cottage, are almost the only fruits of the country; but the Pine-apple, the Mango, the Avocado-pear, the Custard-apple, the Rambutan (*Nephelium lappaceum*), the Fig, the Granadilla, and a number of other exotics, are successfully reared in the gardens of the wealthier inhabitants of the towns and villages; and within the last few years the peerless Mangustin of Malacca, the delicacy of which we can imagine to resemble that of perfumed snow, has been successfully cultivated in the gardens of Caltura and Colombo.

With the exception of the orange, the fruits of Ceylon have one deficiency, common, I apprehend, to all tropical countries. They are wanting in that piquancy which in northern climates is attributable to the exquisite perfection in which the sweet and aromatic flavours are blended with the acidulous. Either the acid is so ascendant as to be repulsive to the European palate, or the saccharine so preponderates as to render Singhalese fruit cloying and distasteful.

Still, all other defects are compensated by the coolness which pervades them; and, under the exhaustion of a blazing sun, no more exquisite physical enjoyment can be imagined than the chill and fragrant flesh of the pine-apple, or the abundant juice of the mango, which, when freshly pulled, feels as cool as iced water. But the fruit must be eaten instantly; even an interval of a few minutes after it has been gathered is sufficient to destroy the charm; for, once severed from the stem, it rapidly acquires the temperature of the surrounding air.

Sufficient admiration has hardly been bestowed upon the marvellous power displayed by the vegetable world in adjusting its own temperature, notwithstanding atmospheric fluctuations,—a faculty in the manifestation

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of which it appears to present a counterpart to that exhibited by animal economy in regulating its heat. So uniform is the exercise of the latter faculty in man and the higher animals, that there is barely a difference of three degrees between the warmth of the body in the utmost endurable vicissitudes of heat and cold; and in vegetables an equivalent arrangement enables them in winter to keep their temperature somewhat above that of the surrounding air, and in summer to reduce it far below it. It would almost seem as if plants possessed a power of producing cold analogous to that exhibited by animals in producing heat; and of this beneficent arrangement man enjoys the benefit in the luxurious coolness of the fruit which nature lavishes on the tropics.

The peculiar organisation by which this result is obtained is not free from obscurity, but in all probability the means of adjusting the temperature of plants is simply dependent on evaporation. As regards the power possessed by vegetables of generating heat, although it has been demonstrated to exist, it is in so trifling a degree as to be almost inappreciable, except at the period of germination, when it probably arises from the consumption of oxygen in generating the carbonic acid gas which is then evolved. The faculty of retaining this warmth at night and at other times may, therefore, be referable mainly to the closing of the pores, and the consequent check of evaporation.

On the other hand, the faculty of maintaining a temperature below that of the surrounding air, can only be accounted for by referring it to the mechanical process of imbibing a continuous supply of fresh moisture from the soil, the active transpiration of which imparts coolness to every portion of the tree and its fruit. It requires this combined operation to produce the desired result; and the extent to which evaporation can bring down the temperature of the moisture received by absorption, may be inferred from the fact that Dr. Hooker, when

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in the valley of the Ganges, found the fresh milky juice of the Mudar (*calotropis*) to be but 72°, whilst the damp sand in the bed of the river where it grew was from 90° to 104°.

Even in temperate climates this phenomenon is calculated to excite admiration; but it is still more striking to find the like effect rather increased than diminished in the tropics, where one would suppose that the juices, especially of a small and delicate plant, before they could be cooled by evaporation, would be liable to be heated by the blazing sun.

A difficulty would also seem to present itself in the instance of fruit, whose juices, having to undergo a chemical change, circulation would be conjectured to be slower; and in the instance of those with hard skins, such as the pomegranate, or with a tough leathery coating, like the mango, the evaporation might be imagined to be less than in those of a soft and spongy texture. But all share alike in the general coolness of the plant, so long as circulation supplies fluid for evaporation; and the moment this resource is cut off by the separation of the fruit from the tree, the supply of moisture failing, the process of refrigeration is arrested, and the charm of agreeable freshness gone.[1]

It only remains to notice the aquatic plants, which are found in greater profusion in the northern and eastern provinces than in any other districts of the island, owing to the innumerable tanks and neglected watercourses which cover the whole surface of this once productive province, but which now only harbour the alligator, or satisfy the thirst of the deer and the elephant.

The chief ornaments of these neglected sheets of water

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[1] See on this subject Lindley's *Introduction to Botany*, vol. ii. book 2, ch. viii. p. 215.
Carpenter, *Animal Physiology*, ch. ix. s. 407. Carpenter's *Vegetable Physiology*, ch. xi. s. 407. Lond. 1848.

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are the large red and white Lotus[1], whose flowers may be seen from a great distance reposing on their broad green leaves. In China and some parts of India the black seeds of these plants, which are not unlike little acorns in shape, are served at table in place of almonds, which they are said to resemble, but with a superior delicacy of flavour. At some of the tanks where the lotus grows in profusion in Ceylon, I tasted the seeds enclosed in the torus of the flowers, and found them white and delicately-flavoured, not unlike the small kernel of the pine cone of the Apennines. This red lotus of the island appears to be the one that Herodotus describes as abounding in the Nile in his time, but which is now extinct; with a flower resembling a rose, and a fruit in shape like a wasp's nest, and containing seeds of the size of an olive stone, and of an agreeable flavour.[2] But it has clearly no identity with those which he describes as the food of the Lotophagi of Africa, of the size of the mastic[3], sweet as a date, and capable of being made into wine.

One species of the water lily, the *Nymphæa rubra*, with small red flowers, and of great beauty, is common in the ponds near Jaffna and in the Wanny; and we found in the fosse, near the fort of Moeletivoe, the beautiful blue lotus, *N. stellata*, with lilac petals, approaching to purple in the centre, which had not previously been supposed to be a native of the island.

Another very interesting aquatic plant, which was discovered by Dr. Gardner in the tanks north of Trincomalie, is the *Desmanthus natans*, with highly sensitive leaves float-

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[1] Nelumbium speciosum.

[2] Herodotus, b. ii. s. 92.

[3] The words are "*ἔστι μέγαθος ὅσον τε τῆς σχίνου*" (Herod. b. iv. s. 177); and as *σχῖνος* means also a *squill* or a *sea-onion*, the fruit above referred to, as the food of the Lotophagi, must have been of infinitely larger size and in every way different from the lotus of the Nile, described in the 2nd book, as well as from the lotus in the East. Lindley records the conjecture that the article referred to by Herodotus was the *nabk*, the berry of the lote-bush (*Zizyphus lotus*), which the Arabs of Barbary still eat. (*Vegetable Kingdom*, p. 582.)

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ing on the surface of the water. It is borne aloft by masses of a spongy cellular substance, which occur at intervals along its stem and branches, but the roots never touch the bottom, absorbing nourishment whilst floating at liberty, and only found in contact with the ground after the subsidence of water in the tanks.[1]

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[1] A species of *Utricularia*, with yellow flowers (U. stellaris), is a common water plant in the still lakes near the fort of Colombo, where an opportunity is afforded of observing the extraordinary provision of nature for its reproduction. There are small appendages attached to the roots, which become distended with air, and thus carry the plant aloft to the surface, during the cool season. Here it floats till the operation of flowering is over, when the vesicles burst, and by its own weight it returns to the bottom of the lake to ripen its seeds and deposit them in the soil; after which the air vessels again fill, and again it reascends to undergo the same process of fecundation.

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PART II.

ZOOLOGY.

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CHAPTER I.

MAMMALIA.

WITH the exception of the Mammalia and the Birds, the fauna of Ceylon has, up to the present, failed to receive that systematic attention to which its richness and variety so amply entitle it. The Singhalese themselves, habitually indolent and singularly unobservant of nature in her operations, are at the same time restrained from the study of natural history by the tenets of their religion which forbid the taking of life under any circumstances. From the nature of their avocations, the majority of the European residents engaged in planting and commerce, are discouraged from cultivating this taste; and it is to be regretted that the civil servants of the government, whose position and duties would have afforded them influence and extended opportunity for successful investigation, have never seen the importance of encouraging such studies.

The first effective impulse to the cultivation of natural science in Ceylon, was communicated by Dr. Davy when connected with the medical staff of the army from 1816 to 1820, and his example stimulated some of the assistant-surgeons of Her Majesty's forces to make collections in illustration of the productions of the colony. Of these the late Dr. Kinnis was one of the most energetic and successful. He was seconded by Dr. Templeton of the Royal Artillery, who engaged assiduously in the investigation of various orders, and commenced an interchange of specimens with Mr. Blyth[1], the distinguished naturalist and curator of the Calcutta Museum.

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[1] *Journ. Asiat. Soc. Bengal,* vol. xv. p. 280. 314.

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The birds and rarer vertebrata of the island were thus compared with their peninsular congeners, and a tolerable knowledge of those belonging to the island, so far as regards the higher classes of animals, has been the result. The example so set has been perseveringly followed by Mr. E. L. Layard and Dr. Kelaart, and infinite credit is due to Mr. Blyth for the zealous and untiring energy with which he has devoted his attention and leisure to the identification of the various interesting species forwarded from Ceylon, and their description in the Calcutta Journal. To him, and to the gentlemen I have named, we are mainly indebted for whatever accurate knowledge we now possess of the zoology of the colony.

The mammalia, birds, and reptiles received their first scientific description in an able work published recently by Dr. Kelaart of the army medical staff[1], which is by far the most valuable that has yet appeared on the Singhalese fauna. Co-operating with him, Mr. Layard has supplied a fund of information especially in ornithology and conchology. The zoophytes and crustacea have been investigated by Professor Harvey, who visited Ceylon for that purpose in 1852, and by Professor Schmarda, of the University of Prague, who was lately sent there for a similar object. From the united labours of these gentlemen and others interested in the same pursuits, we may hope at an early day to obtain such a knowledge of the zoology of Ceylon, as may to some extent compensate for the long indifference of the government officers.

I. QUADRUMANA. 1. *Monkeys.*—To a stranger in the tropics, among the most attractive creatures in the forests are the troops of *monkeys*, which career in ceaseless chase among the loftiest trees. In Ceylon there

[1] *Prodromus Faunæ Zeylanicæ; being Contributions to the zoology of Ceylon*, by F. KELAART, Esq., M.D., F.L.S., &c., &c. 2 vols. Colombo and London, 1852. Mr. DAVY, of the Medical Staff, brother to Sir Humphry, published in 1821 his *Account of the Interior of Ceylon and its Inhabitants*, which contains the earliest notices of the natural history of the island, and especially of the Ophidian reptiles.

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are five species, four of which belong to one group, the Wanderoos, and the other is the little graceful grimacing *rilawa*[1], which is the universal pet and favourite, of both natives and Europeans.

KNOX, in his captivating account of the island, gives an accurate description of both; the Rilawas, with "no beards, white faces, and long hair on the top of their heads, which parteth and hangeth down like a man's, and which do a deal of mischief to the corn, and are so impudent that they will come into their gardens, and eat such fruit as grows there. And the Wanderoos, some as large as our English Spaniel dogs, of a darkish grey colour, and black faces with great white beards round from ear to ear, which makes them shew just like old men. This sort does but little mischief, keeping in the woods, eating only leaves and buds of trees, but when they are catched they will eat anything."[2]

Knox; whose experience was confined almost exclusively to the hill country around Kandy, spoke in all probability of one large and comparatively powerful species, *Presbytes ursinus*, which inhabits the lofty forests, and which, as well as another of the same group, *P. Thersites*, was, till recently, unknown to European naturalists. The Singhalese word *Ouanderu*, has a generic sense, and being in every respect the equivalent for our own term of "monkey," it necessarily comprehends the low country species, as well as those which inhabit other parts of the island. And, in point of fact, in the island there are no less than four animals, each of which is entitled to the name of "wanderoo."[3]

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[1] *Macacus pileatus*, Shaw and Desmmarest. The "bonneted Macaque" is common in the south and west; and a spectacled monkey is *said* to inhabit the low country near to Bintenne; but I have never seen one brought thence. A paper by Dr. TEMPLETON, in the *Mag. Nat. Hist.* n. s. xiv. p. 361, contains some interesting facts relative to the Rilawa of Ceylon.

[2] KNOX, *Historical Relation of Ceylon, an Island in the East Indies.*— P. i. ch. vi. p. 25. Fol. Lond. 1681.

[3] Down to a very late period, a large and somewhat repulsive-looking monkey, common to the Malabar coast, the Silenus veter, *Linn.*, was,

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Each separate species has appropriated to itself a different district of the wooded country, and seldom encroaches on the domain of its neighbours.

1. Of the four species found in Ceylon, the most numerous in the island, and the one best known in Europe, is the Wanderoo of the low country, the *P. cephalopterus* of Zimmerman.[1] It is an active and intelligent creature, not much larger than the common bonneted Macaque, and far from being so mischievous as others of the monkeys in the island. In captivity it is remarkable for the gravity of its demeanour and for an air of melancholy in its expression and movements, which is completely in character with its snowy beard and venerable aspect. Its disposition is gentle and confiding, it is in the highest degree sensible of kindness, and eager for endearing attentions, uttering a low plaintive cry when its sympathies are excited. It is particularly cleanly in its habits when domesticated, and spends much of its time in trimming its fur, and carefully divesting its hair of particles of dust.

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from the circumstance of his possessing a "great white beard," incorrectly assumed to be the "wanderoo" of Ceylon, described by KNOX; and under that usurped name it has figured in every author from Buffon to the present time. Specimens of the true Singhalese species were, however, received in Europe; but in the absence of information in this country as to their actual habitat, they were described, first by Zimmerman, on the continent, under the name of *Leucoprymnus cephalopterus*, and subsequently by Mr. E. Bennett, under that of *Semnopithecus Nestor* (*Proc. Zool. Soc.* pt. i. p. 67: 1833); the generic and specific characters being on this occasion most carefully pointed out by that eminent naturalist. Eleven years later Dr. Templeton forwarded to the Zoological Society a description, accompanied by drawings, of the wanderoo of the western maritime districts of Ceylon, and noticed the fact that the wanderoo of authors (S. veter) was not to be found in the island except as an introduced species in the custody of the Arab horse-dealers, who visit the port of Colombo at stated periods. Mr. Waterhouse, at the meeting (*Proc. Zool. Soc.* p. 1: 1844) at which this communication was read, recognised the identity of the subject of Dr. Templeton's description with that already laid before them by Mr. Bennett; and from this period the species in question was believed to truly represent the wanderoo of Knox. The later discovery, however, of the P. ursinus by Dr. Kelaart, in the mountains amongst which we are assured that Knox spent so many years of captivity, reopens the question, but at the same time appears to me to clearly demonstrate that in this latter we have in reality the animal to which his narrative refers.

[1] Leucoprymnus Nestor, *Bennett.*

Although common in the southern and western provinces, it is never found at a higher elevation than 1300 feet.

When observed in their native wilds, a party of twenty or thirty of these creatures are generally busily engaged in the search for berries and buds. They are seldom to be seen on the ground, and then only when they have descended to recover seeds or fruit that have fallen at the foot of their favourite trees. In their alarm, when disturbed, their leaps are prodigious; but generally speaking, their progress is made not so much by *leaping* as by swinging from branch to branch, using their powerful arms alternately; and when baffled by distance, flinging themselves obliquely so as to catch the lower boughs of an opposite tree, the momentum acquired by their descent being sufficient to cause a rebound, that carries them again upwards, till they can grasp a higher branch; and thus continue their headlong flight. In these perilous achievements, wonder is excited less by the surpassing agility of these little creatures, frequently encumbered as they are by their young, which cling to them in their career, than by the quickness of their eye and the unerring accuracy with which they seem almost to calculate the angle at which a descent would enable them to cover a given distance, and the recoil to elevate themselves again to a higher altitude.

2. The low country Wanderoo is replaced in the hills by the larger species, *P. ursinus*, which inhabits the mountain zone. The natives, who designate the latter the *Maha* or Great Wanderoo, to distinguish it from the *Kaloo*, or black one, with which they are familiar, describe it as much wilder and more powerful than its congener of the lowland forests. It is rarely seen by Europeans, this portion of the country having till very recently been but partially opened; and even now it is difficult to observe its habits, as it seldom approaches the few roads which wind through these deep solitudes,

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It was first captured by Dr. Kelaart in the woods near Neuera-ellia, and from its peculiar appearance it has been named *P. ursinus* by Mr. Blyth.[1]

3. The *P. Thersites*, which is chiefly distinguished from the others by wanting the head tuft, is so rare that it was for some time doubtful whether the single specimen procured by Dr. Templeton from Neuera-kalawa, west of Trincomalie, and on which Mr. Blyth conferred this new name, was in reality native; but the occurrence of a second, since identified by Dr. Kelaart, has established its existence as a separate species.

Like the common wanderoo, this one was partial to fresh vegetables, plantains, and fruit; but he ate freely boiled rice, beans, and gram. He was fond of being noticed and petted, stretching out his limbs in succession to be scratched, drawing himself up so that his ribs might be reached by the finger, and closing his eyes during the operation, evincing his satisfaction by grimaces irresistibly ludicrous.

4. The *P. Priamus* inhabits the northern and eastern provinces, and the wooded hills which occur in these portions of the island. In appearance it differs both in size and in colour from the common wanderoo, being larger and more inclining to grey; and in habits it is much less reserved. At Jaffna, and in other parts of the island where the population is comparatively numerous, these monkeys become so familiarised with the presence of man as to exhibit the utmost daring and indifference. A flock of them will take possession of a palmyra palm; and so effectually can they crouch and conceal themselves among the leaves that, on the slightest alarm, the whole party becomes invisible in an instant. The presence of a dog, however excites

[1] Mr. Blyth quotes as authority for this trivial name a passage from MAJOR FORBES' *Eleven Years in Ceylon*; and I can vouch for the graphic accuracy of the remark.—"A species of very large monkey, that passed some distance before me, when resting on all fours, looked so like a Ceylon bear, that I nearly took him for one."

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such an irrepressible curiosity that, in order to watch his movements, they never fail to betray themselves. They may be seen frequently congregated on the roof of a native hut; and, some years ago, the child of a European clergyman stationed at Tillipallí having been left on the ground by the nurse, was so teased and bitten by them as to cause its death.

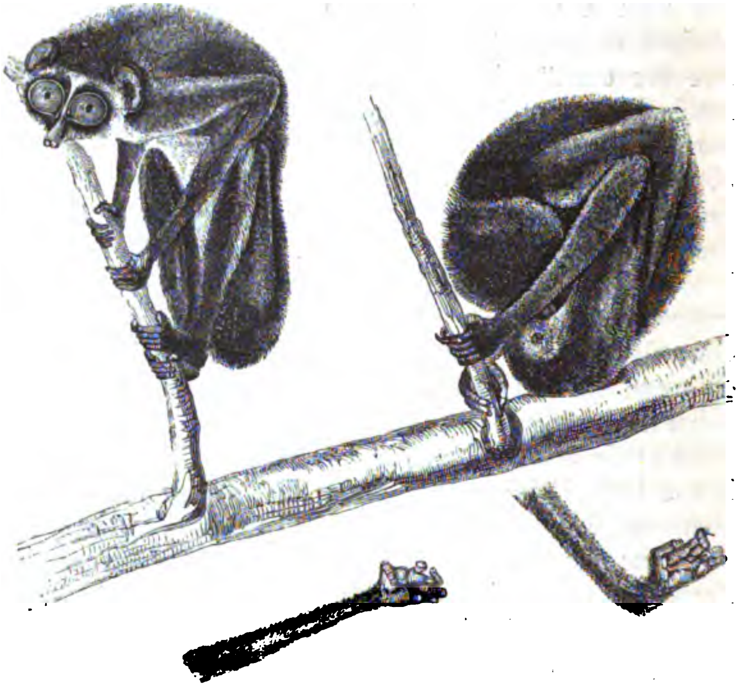
The Singhalese have the impression that the remains of a monkey are never found in the forest; a belief which they have embodied in the proverb that "he who has seen a white crow, the nest of a paddy bird, a straight coco-nut tree, or a dead monkey, is certain to live for ever." This piece of folk-lore has evidently reached Ceylon from India, where it is believed that persons dwelling on the spot where a hanuman monkey, *S. entellus*, has been killed, will die, and that even its bones are unlucky, and that no house erected where they are hid under ground can prosper. Hence when a house is to be built, it is one of the employments of the Jyotish philosophers to ascertain by their science that none such are concealed; and Buchanan observes that "it is, perhaps, owing to this fear of ill-luck that no native will acknowledge his having seen a dead hanuman."[1]

The only other quadrumanous animal found in Ceylon is the little loris[2], which, from its sluggish movements, nocturnal habits, and consequent inaction during the day, has acquired the name of the "Ceylon Sloth." There are two varieties in the island; one of the ordinary fulvous brown, and another larger, whose fur is entirely black. A specimen of the former was sent to me from Chilaw, on the western coast, and lived for some time at Colombo, feeding on rice, fruit, and vegetables. It was partial to ants and other insects, and always eager for milk or the bone of a fowl. The naturally slow motion of its limbs enables the loris to

[1] BUCHANAN'S *Survey of Bhagulpoor*, p. 142. At Gibraltar it is believed that the body of *a dead monkey* is never found on the rock.

[2] Loris gracilis, *Geoff.*

approach its prey so stealthily that it seizes birds before they can be alarmed by its presence. The natives assert that it has been known to strangle the pea-fowl at night, and feast on the brain. During the day the one which I kept was usually asleep in the strange position represented below; its perch firmly grasped with all hands, its back curved into a ball of soft fur, and its head hidden deep between its legs. The singularly-large and intense eyes of the loris have attracted the



THE LORIS

attention of the Singhalese, who capture the creature for the purpose of extracting them as charms and love-potions, and this they are said to effect by holding the little animal to the fire till its eyeballs burst. Its Tamil name is *theivangu*, or "thin-bodied;" and hence a deformed child or an emaciated person has acquired

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in the Tamil districts the same epithet. The light-coloured variety of the loris in Ceylon has a spot on its forehead, somewhat resembling the *namam*, or mark worn by the worshippers of Vishnu; and, from this peculiarity, it is distinguished as the *Nama-theivangu.*[1]

II. Cheiroptera. *Bats.*—The multitude of *bats* is one of the features of the evening landscape; they abound in every cave and subterranean passage, in the tunnels on the highways, in the galleries of the fortifications, in the roofs of the bungalows, and the ruins of every temple and building. At sunset they are seen issuing from their diurnal retreats to roam through the twilight in search of crepuscular insects, and as night approaches and the lights in the rooms attract the night-flying lepidoptera, the bats sweep round the dinner-table and carry off their tiny prey within the glitter of the lamps. Including the frugivorous section about sixteen species have been identified in Ceylon, and of these, two varieties are peculiar to the island. The colours of some of them are as brilliant as the plumage of a bird, bright yellow, deep orange, and a rich ferruginous brown inclining to red.[2] The Roussette[3] of Ceylon (the "Flying-fox," as it is usually called by Europeans,) measures from three to four feet from point to point of its extended wings, and some of them have been seen wanting but a few inches of five feet in the alar expanse. These sombre-looking creatures feed chiefly on ripe fruits, the guava, the plantain, and the rose-apple, and are abundant in all the maritime districts, especially at the season when the silk-cotton tree, the *pulun-imbul*[4], is putting forth its flower-buds, of which

[1] There is an interesting notice of the loris of Ceylon by Dr. Templeton, in the *Mag. Nat. Hist.* 1844, ch. xiv. p. 362.

[2] Rhinolophus affinis? *var.* rubidus, *Kelaart.*

Hipposideros murinus, *var.* fulvus, *Kelaart.*

Hipposideros speoris, *var.* aureus, *Kelaart.*

Kerivoula picta, *Pallas.*

Scotophilus Heathii, *Horsf.*

[3] Pteropus Edwardsii, *Geoff.*

[4] Eriodendron orientale, *Stead.*

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they are singularly fond. By day they suspend themselves from the highest branches, hanging by the claws of the hind legs, pressing the chin against the breast, and using the closed membrane attached to the forearms as a mantle to envelope the head. At sunset launching into the air, they hover with a murmuring sound occasioned by the beating of their broad membranous wings, around the fruit trees, on which they feed till morning, when they resume their pensile attitude as before. They are strongly attracted to the coco-nut trees during the period when toddy is drawn for distillation, and exhibit, it is said, at such times symptoms resembling intoxication.[1]

The flying-fox is killed by the natives for the sake of its flesh, which I have been told, by a gentleman who has eaten it, resembles that of the hare.[2]

There are several varieties (some of them peculiar to the island) of the horse-shoe-headed *Rhinolophus*, with the strange leaf-like appendage erected on the extremity of the nose. It has been suggested that bats, though nocturnal, are deficient in that keen vision characteristic

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[1] Mr. THWAITES, of the Royal Botanic Garden, at Kandy, in a recent letter, 19th Dec. 1858, gives the following description of a periodical visit of the pteropus to an avenue of fig-trees:—"You would be much interested now in observing a colony of the *pteropus* bat, which has established itself for a season on some trees within sight of my bungalow. They came about the same time last year, and, after staying a few weeks, disappeared: I suppose they had demolished all the available food in the neighbourhood. They are now busy of an evening eating the figs of *Ficus elastica*, of which we have a long avenue in the grounds, as I daresay you remember.

"These bats take possession during the day of particular trees, upon which they hang like so much ripe fruit, but they take it into their heads to have some exercise every morning between the hours of 9 and 11, during which they are wheeling about in the air by the hundred, seemingly enjoying the sunshine and warmth. They then return to their favourite tree, and remain quiet until the evening, when they move off towards their feeding ground. There is a great chattering and screaming amongst them before they can get agreeably settled in their places after their morning exercise; quarrelling, I suppose, for the most comfortable spots to hang on by during the rest of the day. The trees they take possession of become nearly stripped of leaves; and it is a curious sight to see them in such immense numbers. I do not allow them to be disturbed."

[2] In Western India the native Portuguese eat the flying-fox, and pronounce it delicate, and far from disagreeable in flavour.

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of animals which take their prey at night. I doubt whether this conjecture be well founded; but at least it would seem that in their peculiar œconomy some additional power is required to supplement that of vision, as in insects that of touch is superadded, in the most sensitive development to that of sight. Hence, it is possible that the extended screen stretched at the back of their nostrils may be intended by nature to facilitate the collection and conduction of odours, as the vast development of the shell of the ear in the same family is designed to assist in the collection of sounds—and thus to reinforce their vision when in pursuit of their prey at twilight by the superior sensitiveness of the organs of hearing and smell, as they are already remarkable for that marvellous sense of touch which enables them, even when deprived of sight, to direct their flight with security, by means of the delicate nerves of the wing. One tiny little bat, not much larger than the humble bee[1], and of a glossy black colour, is sometimes to be seen about Colombo. It is so familiar and gentle that it will alight on the cloth during dinner, and manifests so little alarm that it seldom makes any effort to escape before a wine glass can be inverted to secure it.[2]

III. Carnivora.—*Bears.*—Of the *carnivora*, the one most dreaded by the natives of Ceylon, and the only one of the larger animals which makes the depths of the forest its habitual retreat, is the bear[3], attracted by the honey which is to be found in the hollow trees and clefts of the rocks. Occasionally spots of fresh earth are observed which have been turned up by them in search of some favourite root. They feed also on the termites and ants. A friend of mine traversing the forest near Jaffna, at early dawn, had his attention attracted by the

[1] It is a *very* small Singhalese variety of Scotophilus Coromandelicus, *F. Cuv.*

[2] For a notice of the curious parasite peculiar to the bat, see Note A. end of this chapter.

[3] Prochilus labiatus, *Blainville.*

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growling of a bear, which was seated upon a lofty branch thrusting portions of a red-ant's nest into its mouth with one paw, whilst with the other he endeavoured to clear his eyebrows and lips of the angry inmates which bit and tortured him in their rage. The Ceylon bear is found only in the low and dry districts of the northern and south-eastern coast, and is seldom met with on the mountains or the moist and damp plains of the west. It is furnished with a bushy tuft of hair on the back, between the shoulders, to which the young are accustomed to cling till sufficiently strong to provide for their own safety. During a severe drought which prevailed in the northern province in 1850, the district of Caretchy was so infested by bears that the Oriental custom of the women resorting to the wells was altogether suspended, as it was a common occurrence to find one of these animals in the water, unable to climb up the yielding and slippery soil, down which his thirst had impelled him to slide during the night.

Although the structure of the bear shows him to be naturally omnivorous, he rarely preys upon flesh in Ceylon, and his solitary habits whilst in search of honey and fruits, render him timid and retiring. Hence he evinces alarm on the approach of man or other animals, and, unable to make a rapid retreat, his panic rather than any vicious disposition leads him to become an assailant in self-defence. But so furious are his assaults under such circumstances that the Singhalese have a terror of his attack greater than that created by any other beast of the forest. If not armed with a gun, a native, in the places where bears abound, usually carries a light axe, called "kodelly," with which to strike them on the head. The bear, on the other hand, always aims at the face, and, if successful in prostrating his victim, usually commences by assailing the eyes. I have met numerous individuals on our journeys who exhibited frightful scars from these encounters, the white seams

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of their wounds contrasting hideously with the dark colour of the rest of their bodies.

The Veddahs in Bintenne, whose chief stores consist of honey, live in dread of the bears, because, attracted by its perfume, they will not hesitate to attack their rude dwellings, when allured by this irresistible temptation. The Post-office runners, who always travel by night, are frequently exposed to danger from these animals, especially along the coast from Putlam to Aripo, where they are found in considerable numbers; and, to guard against surprise, they are accustomed to carry flambeaux, to give warning to the bears, and enable them to shuffle out of the path.[1]

Leopards[2] are the only formidable members of the

[1] Amongst the Singhalese there is a belief that certain charms are efficacious in protecting them from the violence of bears, and those whose avocations expose them to encounters of this kind are accustomed to carry a talisman either attached to their neck or enveloped in the folds of their luxuriant hair. A friend of mine, writing of an adventure which occurred at Anarajapoora, thus describes an occasion on which a Moor, who attended him, was somewhat rudely disabused of his belief in the efficacy of charms upon bears:— "Desiring to change the position of a herd of deer, the Moorman (with his charm) was sent across some swampy land to disturb them. As he was proceeding we saw him suddenly turn from an old tree and run back with all speed, his hair becoming unfastened and like his clothes streaming in the wind. It soon became evident that he was flying from some terrific object, for he had thrown down his gun, and, in his panic, he was taking the shortest line towards us, which lay across a swamp covered with sedge and rushes that greatly impeded his progress, and prevented us approaching him, or seeing what was the cause of his flight. Missing his steps from one hard spot to another he repeatedly fell into the water, but he rose and resumed his flight. I advanced as far as the sods would bear my weight, but to go further was impracticable. Just within ball range there was an open space, and, as the man gained it, I saw that he was pursued by a bear and two cubs. As the person of the fugitive covered the bear, it was impossible to fire without risk. At last he fell exhausted, and the bear being close upon him, I discharged both barrels. The first broke the bear's shoulder, but this only made her more savage, and rising on her hind legs she advanced with ferocious grunts, when the second barrel, though I do not think it took effect, served to frighten her, for turning round she retreated at full speed, followed by the cubs. Some natives then waded through the mud to the Moorman, who was just exhausted and would have been drowned but that he fell with his head upon a tuft of grass: the poor man was unable to speak, and for several weeks his intellect seemed confused. The adventure sufficed to satisfy him that he could not again depend upon a charm to protect him from bears, though he always insisted that but for its having fallen from his hair where he had fastened it under his turban, the bear would not have ventured to attack him."

[2] Felis pardus, *Linn.* What is called a leopard, or a cheetah, in Ceylon, is in reality the true panther.

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tiger race in Ceylon, and they are neither very numerous nor very dangerous as they seldom attack man. By Europeans they are commonly called cheetahs; but the true cheetah, the hunting leopard of India (*Felis jubata*), does not exist in Ceylon. There is a rare variety which has been found in various parts of the island, in which the skin, instead of being spotted, is of a uniform black.[1] The leopards frequent the vicinity of pasture lands in quest of the deer and other peaceful animals which resort to them; and the villagers often complain of the destruction of their cattle by these formidable marauders. In relation to them, the natives have a curious but firm conviction that when a bullock is killed by a leopard, and, in expiring, falls so that *its right side is undermost*, the leopard will not return to devour it. I have been told by English sportsmen (some of whom share in the popular belief), that sometimes, when they have proposed to watch by the carcase of a bullock recently killed by a leopard, in the hope of shooting the spoiler on his return in search of his prey, the native owner of the slaughtered animal, though earnestly desiring to be avenged, has assured them that it would be in vain, as, the beast having fallen on its right side, the leopard would not return.

The Singhalese hunt them for the sake of their extremely beautiful skins, but prefer taking them in traps and pitfalls, and occasionally in spring cages formed of poles driven firmly into the ground, within which a kid is generally fastened as a bait; the door being held open by a sapling bent down by the united force of several men, and so arranged to act as a spring, to which a noose is ingeniously attached formed of plaited deer hide. The cries of the kid attract the leopards, one of which, being tempted to enter, is enclosed by the liberation of the spring and grasped firmly round the body by the noose.

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[1] F. melas, *Peron* and *Leseur*.

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Like the other carnivora, they are timid and cowardly in the presence of man, never intruding on him voluntarily and making a hasty retreat when approached. Instances have, however, occurred of individuals having been slain by them, and like the tiger, it is believed, that having once tasted human blood they acquire an habitual relish for it. A peon on night duty at the court-house at Anarajapoora, was some years ago carried off by a leopard from a table in the verandah on which he had laid down his head to sleep. At Batticaloa a "cheetah" in two instances in succession was known to carry off men placed on a stage erected in a tree to drive away elephants from the rice-lands: but such cases are rare, and as compared with their dread of the bear, the natives of Ceylon entertain but slight apprehensions of the "cheetah." It is, however, the dread of sportsmen, whose dogs when beating in the jungle are especially exposed to its attacks: and I am aware of one instance in which a party having tied their dogs to the tent-pole for security, and fallen asleep around them, a leopard sprang into the tent and carried off a dog from the midst of its slumbering masters.

They are strongly attracted by the peculiar odour which accompanies small-pox. The reluctance of the natives to submit themselves or their children to vaccination exposes the island to frightful visitations of this disease, and in the villages in the interior it is usual on such occasions to erect huts in the jungle to serve as temporary hospitals. Towards these the leopards are certain to be allured; and the medical officers are obliged to resort to increased precautions in consequence. On one occasion being in the mountains near Kandy, a messenger despatched to me through the jungle excused his delay by stating that a "cheetah" had seated itself in the only practicable path, and remained quietly licking its fore paws and rubbing them over its face, till he was forced to drive it, with stones, into the forest.

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Major SKINNER, who for upwards of forty years has had occasion to live almost constantly in the interior, occupied in the prosecution of surveys and the construction of roads, is strongly of opinion that towards man the disposition of the leopard is essentially pacific, and that, when discovered, its natural impulse is to effect its escape. In illustration of this, I insert an extract from one of his letters, which describes an adventure highly characteristic of this instinctive timidity.

"On the occasion of one of my visits to Adam's Peak in the prosecution of my military reconnoissances of the mountain zone, I fixed on a pretty little patena (*i. e.* meadow) in the midst of an extensive and dense forest in the southern segment of the Peak Range, as a favourable spot for operations. It would have been difficult, after descending from the cone of the peak, to have found one's way to this point, in the midst of so vast a wilderness of trees, had not long experience assured me that good game tracks would be found leading to it, and by one of them I reached it. It was in the afternoon, just after one of those tropical sun-showers which decorate every branch and blade with its pendant brilliants, and the little patena was covered with game, either driven to the open space by the drippings from the leaves or tempted by the freshness of the pasture: there were several pairs of elk, the bearded antlered male contrasting finely with his mate; and other varieties of game in a profusion not to be found in any place frequented by man. It was some time before I could allow them to be disturbed by the rude fall of the axe, in our necessity to establish our bivouac for the night, and they were so unaccustomed to danger, that it was long before they took alarm at our noises.

"The following morning, anxious to gain a height in time to avail myself of the clear atmosphere of sunrise for my observations, I started off by myself through the jungle, leaving orders for my men, with my surveying instruments, to follow my track by the notches

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which I cut in the bark of the trees. On leaving the plain, I availed myself of a fine wide game track which lay in my direction, and had gone perhaps half a mile from the camp, when I was startled by a slight rustling in the nilloo[1] to my right, and in another instant, by the spring of a magnificent leopard which, in a bound of full eight feet in height over the lower brushwood, lighted at my feet within eighteen inches of the spot whereon I stood, and lay in a crouching position, his fiery gleaming eyes fixed on me.

"The predicament was not a pleasant one. I had no weapon of defence, and with one spring or blow of his paw the beast could have annihilated me. To move I knew would only encourage his attack. It occurred to me at the moment that I had heard of the power of man's eye over wild animals, and accordingly I fixed my gaze as intently, as the agitation of such a moment enabled me, on his eyes: we stared at each other for some seconds, when, to my inexpressible joy, the beast turned and bounded down the straight open path before me." "This scene occurred just at that period of the morning when the grazing animals retired from the open patena to the cool shade of the forest: doubtless, the leopard had taken my approach for that of a deer, or some such animal. And if his spring had been at a quadruped instead of a biped, his distance was so well measured, that it must have landed him on the neck of a deer, an elk, or a buffalo; as it was, one pace more would have done for me. A bear would not have let his victim off so easily."

It is said, but I never have been able personally to verify the fact, that the Ceylon leopard exhibits a peculiarity in being unable entirely to retract its claws within their sheaths.

Of the lesser feline species the number and variety

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[1] A species of one of the suffruticose *Acanthaceæ* which grows abundantly in the mountain ranges of Ceylon. See *ante*, p. 90 n.

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in Ceylon is inferior to that of India. The Palm-cat[1] lurks by day among the fronds of the coco-nut trees, and by night makes destructive forays on the fowls of the villagers; and, in order to suck the blood of its victim, inflicts a wound so small as to be almost imperceptible. The glossy genette[2], the "*Civet*" of Europeans, is common in the northern province, where the Tamils confine it in cages for sake of its musk, which they collect from the wooden bars on which it rubs itself. Edrisi, the Moorish geographer, writing in the twelfth century, enumerates musk as one of the productions then exported from Ceylon.[3]

Dogs.—There is no native wild dog in Ceylon, but every village and town is haunted by mongrels of European descent, which are known by the generic description of *Pariahs*. They are a miserable race, acknowledged by no owners, living on the garbage of the streets and sewers, lean, wretched, and mangy, and if spoken to unexpectedly, shrinking with an almost involuntary cry. Yet in these persecuted outcasts there survives that germ of instinctive affection which binds the dog to the human race, and a gentle word, even a look of compassionate kindness, is sufficient foundation for a lasting attachment.

The Singhalese, from their religious aversion to taking away life in any form, permit the increase of these desolate creatures till in the hot season they become so numerous as to be a nuisance; and the only expedient hitherto devised by the civil government to reduce their numbers, is once in each year to offer a reward for their destruction, when the Tamils and Malays pursue them in the streets with clubs (guns being forbidden by the police for fear of accidents), and the unresisting dogs are beaten to death on the side-paths and door steps, where they had been taught to resort

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[1] Paradoxurus typus, *F. Cuv.*

[2] Viverra Indica, *Geoffr.*. *Hodgson.*

[3] EDRISI, *Géogr.*, sec. vii. Jaubert's translation, t. ii. p. 72.

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for food. Lord Torrington, during his tenure of office, attempted the more civilised experiment of putting some check on their numbers, by imposing a dog tax, the effect of which would have been to lead to the drowning of puppies; whereas there is reason to believe that dogs are at present *bred* by the horse-keepers to be killed for sake of the reward.

Jackal.—The Jackal[1] in the low country hunts in packs, headed by a leader, and these audacious prowlers have been seen to assault and pull down a deer. The small number of hares in the districts they infest is ascribed to their depredations. An excrescence is sometimes found on the head of the jackal, consisting of a small horny cone about half an inch in length, and concealed by a tuft of hair. This the natives call *Narri-comboo*, and they aver that this "Jackal's horn" only grows on the head of the leader of the pack.[2] The Singhalese and the Tamils alike regard it as a talisman, and believe that its fortunate possessor can command by its instrumentality the realisation of every wish, and that if stolen or lost by him, it will invariably return of its own accord. Those who have jewels to conceal, rest in perfect security if along with them they can deposit a Narri-comboo, fully convinced that its presence is an effectual safeguard against robbers.

Jackals are subject to hydrophobia, and instances are frequent of cattle being bitten by them and dying in consequence.

The Mongoos.—Of the Mongoos or Ichneumons five species have been described; and one which frequents the hills near Neuera-ellia[3], is so remarkable from its

[1] Canis aureus, *Linn.*

[2] In the Museum of the College of Surgeons, London (No. 4362 A), there is a cranium of a jackal which exhibits this strange osseous process on the super-occipital; and I have placed along with it a specimen of the horny sheath, which was presented to me by Mr. Lavalliere, the district judge of Kandy.

[3] *Herpestes vitticollis.* Mr. W. ELLIOTT, in his *Catalogue of Mammalia found in the Southern Maharata Country,* Madras, 1840, says, that

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bushy fur, that the invalid soldiers in the Sanatarium, to whom it is familiar, call it the "Ceylon badger." I have found universally that the natives of Ceylon attach no credit to the European story of the Mongoos (*H. griseus*) resorting to some plant, which no one has yet succeeded in identifying, as an antidote against the bite of the venomous serpents on which it preys. There is no doubt that in its conflicts with the Cobra de capello and other poisonous snakes, which it attacks with as little hesitation as the harmless ones, it may be seen occasionally to retreat, and even to retire into the jungle, and, it is added, to eat some vegetable; but a gentleman who has been a frequent observer of its exploits, assures me that most usually the herb it resorted to was grass; and if this were not at hand, almost any other that grew near seemed equally acceptable. Hence has probably arisen the long list of plants; such as the *Ophioxylon serpentinum* and *Ophiorhiza mungos*, the *Aristolochia Indica*, the *Mimosa octandru*, and others, each of which has been asserted to be the Ichneumon's specific; whilst their multiplicity is demonstrative of the non-existence of any one in particular to which the animal resorts for an antidote. Were there any truth in the tale as regards the mongoos, it would be difficult to understand, why other creatures, such as the secretary bird and the falcon, which equally destroy serpents, should be left defenceless, and the Ichneumon alone provided with a prophylactic. Besides, were the Ichneumon inspired by that courage which would result from the consciousness of security, it would be so indifferent to the bite of the serpent, that we might conclude that, both in its approaches and its assault, it would be utterly careless as to the precise mode of its attack. Such, however, is far

"One specimen of this Herpestes was procured by accident in the Ghat forests in 1829, and is now deposited in the British Museum; it is very rare, inhabiting only the thickest woods, and its habits are very little known," p. 9. In Ceylon it is comparatively common.

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from being the case; and next to its audacity, nothing is more surprising than the adroitness with which it escapes the spring of the snake under a due sense of danger, and the cunning with which it makes its arrangements to leap upon the back and fasten its teeth in the head of the cobra. It is this display of instinctive ingenuity that Lucan[1] celebrates where he paints the Ichneumon diverting the attention of the asp, by the motion of his bushy tail, and then seizing it in the midst of its confusion.

> "Aspidas ut Pharias caudâ solertior hostis
> Ludit, et iratas incertâ provocat umbrâ:
> Obliquusque caput vanas serpentis in auras
> Effusæ toto comprendit guttura morsu
> Letiferam citra saniem; tunc irrita pestis
> Exprimitur, faucesque fluunt pereunte veneno."
>
> *Pharsalia*, lib. iv. v. 729.

The mystery of the mongoos and its antidote has been referred to the supposition that there may be some peculiarity in its organisation which renders it *proof against* the poison of the serpent. It remains for future investigation to determine how far this conjecture is founded in truth; and whether in the blood of the mongoos there exists any element or quality which acts as a prophylactic. Such exceptional provisions are not without precedent in the animal œconomy: the hornbill feeds with impunity on the deadly fruit of the strychnos; the milky juice of some species of euphorbia, which is harmless to oxen, is invariably fatal to the zebra; and the tsetse fly, the pest of South Africa, whose bite is mortal to the ox, the dog, and the horse, is harmless to man and the untamed creatures of the forest.[2]

The Singhalese distinguish one species of mongoos, which they designate "*Hotambeya*," and which they

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[1] The passage in Lucan is a versification of the same narrative related by Pliny, lib. viii. ch. 35; and Ælian, lib. iii. ch. 22.

[2] Dr. LIVINGSTONE, *Tour in S. Africa*, p. 80. Is it a fact that in America pigs extirpate the rattlesnakes with impunity?

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assert never preys upon serpents. A writer in the *Ceylon Miscellany* mentions, that they are often to be seen "crossing rivers and frequenting mud-brooks near Chilaw; the adjacent thickets affording them shelter, and their food consisting of aquatic reptiles, crabs, and mollusca."[1]

IV. Rodentia. *Squirrels.*—Smaller animals in great numbers enliven the forests and lowland plains with their graceful movements. Squirrels[2], of which there are a great variety, make their shrill metallic call heard at early morning in the woods, and when sounding their note of warning on the approach of a civet or a tree-snake, the ears tingle with the loud trill of defiance, which rings as clear and rapid as the running down of an alarum, and is instantly caught up and re-echoed from every side by their terrified playmates.

One of the largest, belonging to a closely allied sub-genus, is known as the "Flying Squirrel,"[3] from its being assisted in its prodigious leaps from tree to tree, by the parachute formed by the skin of the flanks, which on the extension of the limbs front and rear, is laterally expanded from foot to foot. Thus buoyed up in its descent, the spring which it is enabled to make from one lofty tree to another resembles the flight of a bird rather than the bound of a quadruped. Of these pretty creatures there are two species, one common to Ceylon and India, the other (*Sciuropterus Layardii*, Kelaart) is peculiar to the island, and is by far the most beautiful of the family.

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[1] This is possibly the "musbilai" or mouse-cat of Behar, which preys upon birds and fish. Could it be the Urva of the Nepalese (*Urva cancrivora*, Hodgson), which Mr. Hodgson describes as dwelling in burrows, and being carnivorous and ranivorous?—Vide *Journ. As. Soc. Beng.*, vol. vi. p. 56.

[2] Of two kinds which frequent the mountains, one which is peculiar to Ceylon was discovered by Mr. Edgar L. Layard, who has done me the honour to call it the *Sciurus Tennentii*. Its dimensions are large, measuring upwards of two feet from head to tail. It is distinguised from the *S. macrurus* by the predominant black colour of the upper surface of the body, with the exception of a rusty spot at the base of the ears.

[3] Pteromys oral., *Tickel.* P. petaurista, *Pallas.*

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Rats.—Among the multifarious inhabitants to which the forest affords at once a home and provender is the tree rat[1], which forms its nest on the branches, and by turns makes its visits to the dwellings of the natives, frequenting the ceilings in preference to the lower parts of houses. Here it is incessantly followed by the rat-snake[2], whose domestication is encouraged by the native servants, in consideration of its services in destroying vermin. I had one day an opportunity of surprising a snake which had just seized on a rat of this description, and of covering it suddenly with a glass shade, before it had time to swallow its prey. The serpent, which appeared stunned by its own capture, allowed the rat to escape from its jaws, which cowered at one side of the glass in the most pitiable state of trembling terror. The two were left alone for some moments, and on my return to them the snake was as before in the same attitude of sullen stupor. On setting them at liberty, the rat bounded towards the nearest fence; but quick as lightning it was followed by its pursuer, which seized it before it could gain the hedge, through which I saw the snake glide with its victim in its jaws.

Another indigenous variety of the rat is that which made its appearance for the first time in the coffee plantations on the Kandyan hills in the year 1847, and in such swarms does it infest them, that as many as a thousand have been killed in a single day on one estate. In order to reach the buds and blossoms of the coffee, it cuts such slender branches, as would not sustain its weight, and feeds as they fall to the ground; and so delicate and sharp are its incisors, that the twigs thus destroyed are detached by as clean a cut as if severed with a knife. The coffee-rat[3] is an insular variety of the *Mus hirsutus* of W. Elliot, found in Southern India. They

[1] There are two species of the tree rat in Ceylon: M. rufescens, *Gray;* (M. flavescens, *Elliot;*) and Mus nemoralis, *Blyth.*

[2] Coryphodon Blumenbachii.

[3] Golunda Elliot, *Gray.*

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inhabit the forests, making their nests among the roots of the trees, and like the lemmings of Norway and Lapland, they migrate in vast numbers on the occurrence of a scarcity of their ordinary food. The Malabar coolies are so fond of their flesh, that they evince a preference for those districts in which the coffee plantations are subject to these incursions, where they fry the rats in oil, or convert them into curry.

Bandicoot.—Another favourite article of food with the Coolies is the pig-rat or Bandicoot[1], which attains on those hills the weight of two or three pounds, and grows to nearly the length of two feet. As it feeds on grain and roots, its flesh is said to be delicate, and much resembling young pork. Its nests, when rifled, are frequently found to contain considerable quantities of rice, stored up against the dry season.

Porcupine.—The Porcupine[2] is another of the *rodentia* which has drawn down upon itself the hostility of the planters, from its destruction of the young coco-nut palms, to which it is a pernicious and persevering, but withal so crafty, a visitor, that it is with difficulty any trap can be so disguised, or any bait made so alluring, as to lead to its capture. The usual expedient is to place some of its favourite food at the extremity of a trench, so narrow as to prevent the porcupine turning, whilst the direction of his quills effectually bars his retreat. On a newly planted coco-nut tope, at Hang-welle, within a few miles of Colombo, I have heard of as many as twenty-seven being thus captured in a single night; but such success is rare. The more ordinary expedient is to smoke them out by burning straw at the apertures of their burrows. The flesh is esteemed a delicacy in Ceylon, and in consistency, colour, and flavour, it very much resembles that of a young pig.

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[1] Mus bandicota, *Beckst.* The English term bandicoot is a corruption of the Telinga name *pandikoku,* literally *pig-rat.*

[2] Hystrix leucurus, *Sykes.*

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V. EDENTATA. *Pengolin.* — Of the *Edentata* the only example in Ceylon is the scaly ant-eater, called by the Singhalese, Caballaya, but usually known by its Malay name of *Pengolin*[1], a word indicative of its faculty of "rolling itself up" into a compact ball, by bending its head towards its stomach, arching its back into a circle, and securing all by a powerful fold of its mail-covered tail. The feet of the Pengolin are armed with powerful claws, which they double in in walking like the Ant-eater of Brazil. These they use in extracting their favourite food, the termites, from ant-hills and decaying wood. When at liberty, they burrow in the dry ground to a depth of seven or eight feet, where they reside in pairs, and produce annually one or two young.

Of two specimens which I kept alive at different times, one from the vicinity of Kandy, about two feet in length, was a gentle and affectionate creature, which, after wandering over the house in search of ants, would attract attention to its wants by climbing up my knee, laying hold of my leg with its prehensile tail. The other, more than double that length, was caught in the jungle near Chilaw, and brought to me in Colombo. I had always understood that the pengolin was unable to climb trees; but the one last mentioned frequently ascended a tree in my garden, in search of ants, and this it effected by means of its hooked feet, aided by an oblique grasp of the tail. The ants it seized by extending its round and glutinous tongue along their tracks. In both, the scales of the back were a cream-coloured white, with a tinge of red in the specimen which came from Chilaw, probably acquired by the insinuation of the Cabook dust which abounds along the western coast of the island. Generally speaking, they were quiet during the day, and grew restless as evening and night approached.

VI. RUMINANTIA. *The Gaur.*—Besides the deer and

[1] Manis pentadactyla, *Linn.*

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some varieties of the humped ox, which have been introduced from the opposite continent of India, Ceylon has probably but one other indigenous *ruminant*, the buffalo.[1] There is a tradition that the gaur, found in the extremity of the Indian peninsula, was at one period a native of the Kandyan mountains; but as Knox speaks of one which in his time "was kept among the king's creatures" at Kandy[2], and his account of it tallies with that of the *Bos Gaurus* of Hindostan, it would appear even then to have been a rarity. A place between Neuera-ellia and Adam's Peak bears the name of Gowra-ellia, and it is not impossible that the animal may yet be discovered in some of the imperfectly explored regions of the island.[3] I have heard of an instance in which a very old Kandyan, residing in the mountains near the Horton Plains, asserted that when young he had seen what he believed to have been a gaur, and which he described as between an elk and a buffalo in size, dark brown in colour, and very scantily provided with hair.

Oxen.—Oxen are used by the peasantry both in ploughing and in tempering the mud in the wet paddi fields before sowing the rice; and when the harvest is reaped they "tread out the corn," after the immemorial custom of the East. The wealth of the native chiefs and landed proprietors frequently consists in their herds of bullocks, which they hire out to their dependents during the seasons for agricultural labour; and as they already supply them with land to be tilled, and lend the seed which is to crop it, the further contribution of this portion of the labour serves to render the dependence of the peasantry on the chiefs and head-men complete.

The cows are worked equally with the oxen; and

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[1] Bubalus buffelus, *Gray*.

[2] *Historical Relation of Ceylon, &c.*, A.D. 1681. Book i. c. 6.

[3] KELAART, *Fauna Zeylan.*, p. 87.

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as the calves are always permitted to suck them, milk is an article which the traveller can rarely hope to procure in a Kandyan village. From their constant exposure at all seasons, the cattle in Ceylon, both those employed in agriculture and on the roads, are subject to the most devastating murrains, which sweep them away by thousands. So frequent is the recurrence of these calamities, and so extended their ravages, that they exercise a serious influence over the commercial interests of the colony, by reducing the facilities of agriculture, and augmenting the cost of carriage during the most critical periods of the coffee season.

A similar disorder, probably peripneumonia, frequently carries off the cattle in Assam and other hill countries on the continent of India; and there, as in Ceylon, the inflammatory symptoms in the lungs and throat, and the internal derangement and external eruptive appearances, seem to indicate that the disease is a feverish influenza, attributable to neglect and exposure in a moist and variable climate; and that its prevention might be hoped for, and the cattle preserved by the simple expedient of more humane and considerate treatment, especially by affording them cover at night.

During my residence in Ceylon an incident occurred at Neuera-ellia, which invested one of these pretty animals with an heroic interest. A little cow, belonging to an English gentleman, was housed, together with her calf, near the dwelling of her owner, and being aroused during the night by her furious bellowing, the servants, on hastening to the stall, found her goring a leopard, which had stolen in to attack the calf. She had got him into a corner, and whilst lowing incessantly to call for help, she continued to pound him with her horns. The wild animal, apparently stupified by her unexpected violence, was detained by her till despatched by a gun.

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The Buffalo.—Buffaloes abound in all parts of Ceylon, but they are only to be seen in their native wildness in the vast solitudes of the northern and eastern provinces, where rivers, lagoons, and dilapidated tanks abound. In these they delight to immerse themselves, till only their heads appear above the surface; or, enveloped in mud to protect themselves from the assaults of insects, luxuriate in the long sedges by the water margins.

When the buffalo is browsing, a crow will frequently be seen stationed on his back, engaged in freeing it from the ticks and other pests which attach themselves to his leathery hide, the smooth brown surface of which, unprotected by hair, shines with an unpleasant polish in the sunlight. When in motion he throws back his clumsy head till the huge horns rest on his shoulders, and the nose is presented in a line with the eyes. When wild they are at all times uncertain in disposition, but so frequently savage that it is never quite safe to approach them, if disturbed in their pasture or alarmed from their repose in the shallow lakes. On such occasions they hurry into line, drawn up in defensive array, with a few of the oldest bulls in advance; and, wheeling in circles, their horns clashing with a loud sound as they clank them together in their rapid evolutions, the herd betakes itself to flight. Then forming again at a safer distance, they halt as before, elevating their nostrils, and throwing back their heads to take a cautious survey of the intruders. The sportsman rarely molests them, so huge a creature affording no worthy mark for his skill, and their wanton slaughter adding nothing to the supply of food for their assailant.

In the Hambangtotte country, where the Singhalese domesticate the buffaloes, and use them to assist in the labour of the rice lands, the villagers are much annoyed by the wild ones, which mingle with the tame when sent out to the woods to pasture; and it constantly

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happens that a savage stranger, placing himself at the head of the tame herd, resists the attempts of the owners to drive them homewards at sunset. In the districts of Putlam and the Seven Corles buffaloes are generally used for draught; and in carrying heavy loads of salt from the coast towards the interior, they drag a cart over roads which would defy the weaker strength of bullocks.

In one place between Batticaloa and Trincomalie we found the natives making an ingenious use of them when engaged in shooting water-fowl in the vast salt marshes and muddy lakes. Being an object to which the birds are accustomed, the Singhalese train the buffalo to the sport, and, concealed behind, the animal browsing listlessly along, they guide it by ropes attached to its horns, and thus creep undiscovered within shot of the flock. The same practice prevails, I believe, in some of the northern parts of India, where they are similarly trained to assist the sportsman in approaching deer. One of these "sporting buffalaoes" sells for a considerable sum.

The buffalo, like the elk, is sometimes found in Ceylon as an albino, with purely white hair and pink iris. There is a peculiarity in the formation of its foot, which, though it must have attracted attention, I have never seen mentioned by naturalists. It is equivalent to an arrangement that distinguishes the foot of the reindeer from that of the stag and the antelope. In them, the hoofs, being constructed for lightness and flight, are compact and vertical; but, in the reindeer, the joints of the tarsal bones admit of lateral expansion, and the broad hoofs curve upwards in front, while the two secondary ones behind (which are but slightly developed in the fallow deer and others of the same family) are prolonged till, in certain positions, they are capable of being applied to the ground, thus adding to the circumference and sustaining power of the foot. It has been usually suggested as the probable

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design of this structure, that it is to enable the reindeer to shovel under the snow in order to reach the lichens beneath it; but I apprehend that another use of it has been overlooked, that of facilitating its movements in search of food by increasing the difficulty of its sinking in the snow.

A formation precisely analogous in the buffalo seems to point to a corresponding design. The ox, whose life is spent on firm ground, has the bones of the foot so constructed as to afford the most solid support to an animal of its great weight; but in the buffalo, which delights in the morasses on the margins of pools and rivers, the formation of the foot resembles that of the reindeer. The tarsi in front extend almost horizontally from the upright bones of the leg, and spread widely on touching the ground; the hoofs are flattened and broad, with the extremities turned upwards; and the false hoofs descend behind till, in walking, they make a clattering sound. In traversing the marshes, this combination of abnormal incidents serves to give extraordinary breadth to the foot, and not only prevents the buffalo from sinking inconveniently in soft ground[1], but at the same time presents no obstacle to the withdrawal of his foot from the mud.

Deer.—"Deer," says the truthful old chronicler, Robert Knox, "are in great abundance in the woods, from the largeness of a cow to the smallness of a hare, for here is a creature in this land no bigger than the latter, though every part rightly resembleth a deer: it is called *meminna*, of a grey colour, with white spots and good meat."[2] The little creature which thus dwelt in the recollection of the old man, as one of the memo-

[1] PROFESSOR OWEN has noticed a similar fact regarding the rudiments of the second and fifth digits in the instance of the elk and bison, which have them largely expanded where they inhabit swampy ground; whilst they are nearly obliterated in the camel and dromedary, which traverse arid deserts.—OWEN *on Limbs*, p. 34; see also BELL *on the Hand*, ch. iii.

[2] KNOX'S *Relation, &c.*, book i. c. 6.

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rials of his long captivity, is the small "musk deer"[1] so called in India, although neither sex is provided with a musk-bag; and the Europeans in Ceylon know it by the name of the moose deer. Its extreme length never reaches two feet; and of those which were domesticated about my house, few exceeded ten inches in height, their graceful limbs being of similar delicate proportion. It possesses long and extremely large tusks, with which it inflicts a severe bite. The interpreter moodliar of Negombo had a *milk white* Meminna in 1847, which he designed to send home as an acceptable present to Her Majesty, but it was unfortunately killed by an accident.[2]

Ceylon Elk.—In the mountains, the Ceylon elk[3], which reminds one of the red deer of Scotland, attains the height of four or five feet; it abounds in all places which are intersected by shady rivers; where, though its hunting affords an endless resource to the sportsmen, its venison scarcely equals in quality the inferior beef of the lowland ox. In the glades and park-like openings that diversify the great forests of the interior, the spotted Axis troops in herds as numerous as the fallow deer in England; and, in journeys through the jungle, when often dependent on the guns of our party for the precarious supply of the table, we found the flesh of the Axis[4] and the Muntjac[5] a sorry substitute for that of the pea-fowl, the jungle-cock, and flamingo. The occurrence of albinos is very frequent

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[1] Moschus meminna.

[2] When the English took possession of Kandy, in 1803, they found "five beautiful milk-white deer in the palace, which was noted as a very extraordinary thing."—*Letter* in Appendix to PERCIVAL's *Ceylon*, p. 428. The writer does not say of what species they were.

[3] Rusa Aristotelis. Dr. GRAY has lately shown that this is the great *axis* of Cuvier.—*Oss. Foss.* 502, t. 39. f. 10. The Singhalese, on following the elk, frequently effect their approaches by so imitating the call of the animal as to induce them to respond. An instance occurred during my residence in Ceylon, in which two natives, whose mimicry had mutually deceived them, crept so close together in the jungle that one shot the other, supposing the cry to proceed from the game.

[4] Axis maculata, *H. Smith.*

[5] Stylocerus muntjac, *Horsf.*

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in troops of the axis. Deer's horns are an article of export from Ceylon, and considerable quantities are annually sent to the United Kingdom.

VII. PACHYDERMATA. *The Elephant.* — The elephant and the wild boar, the Singhalese "waloora," are the only representatives of the *pachydermatous* order. The latter, which differs in no respect from the wild boar of India, is found in droves in all parts of the island where vegetation and water are abundant. The elephant, the lord paramount of the Ceylon forests, is to be met with in every district, on the confines of the woods, in whose depths he finds concealment and shade during the hours when the sun is high, and from which he emerges only at twilight to wend his way towards the rivers and tanks, where he luxuriates till dawn, when he again seeks the retirement of the deep forests. This noble animal fills so dignified a place both in the zoology and œconomy of Ceylon, and his habits in a state of nature have been so much misunderstood, that I shall devote a separate section to his defence from misrepresentation, and to an exposition of what, from observation and experience, I believe to be his genuine character when free in his native domains.

VIII. CETACEA. — Among the Cetacea the occurrence of the Dugong[1] on various points of the coast, and especially on the western side of the island, will be noticed elsewhere; and whales are so frequently seen that they have been captured within sight of Colombo, and more than once their carcases, after having been flinched by the whalers, have floated on shore near the light-house, tainting the atmosphere within the fort by their rapid decomposition.

From this sketch of the Mammalia it will be seen that, in its general features, this branch of the Fauna bears a striking resemblance to that of Southern India, although many of the larger animals of the latter are

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[1] *Halicore dugong*, F. Cuv.

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unknown in Ceylon; and, on the other hand, some species discovered there are altogether peculiar to the island. A deer[1] as large as the Axis, but differing from it in the number and arrangement of its spots, has been described by Dr. Kelaart, to whose vigilance the natural history of Ceylon is indebted, amongst others, for the identification of two new species of monkeys[2], a number of curious shrews[3], and an orange-coloured ichneumon[4], before unknown. There are also two descriptions of squirrels[5] that have not as yet been discovered elsewhere, one of them belonging to those equipped with a parachute[6], as well as some local varieties of the palm squirrel (Sciurus penicillatus, *Leach*).[7]

But the Ceylon Mammalia, besides wanting a number of minor animals found in the Indian peninsula, cannot boast such a ruminant as the majestic Gaur[8], which inhabits the great forests from Cape Comorin to the Himalaya; and, providentially, the island is equally free of the formidable tiger and the ferocious wolf of Hindustan.

The Hyena and Cheetah[9], common in Southern India, are unknown in Ceylon; and though abundant in deer, the island possesses no example of the Antelope or the Gazelle.

List of Ceylon Mammalia.

A list of the Mammalia of Ceylon is subjoined. In framing it, as well as the lists appended to other chapters on the Fauna of the island, the principal object in view has been to exhibit the extent to which its natural history had been investigated,

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[1] Cervus oryzus, KELAART, *Prod. F. Zeyl.*, p. 83.

[2] Presbytes ursinus, *Blyth*, and P. Thersites, *Elliot*.

[3] Sorex montanus, S. ferrugineus, and Feroculus macropus.

[4] Herpestes fulvescens, KELAART, *Prod. Faun. Zeylan.*, App. p. 42.

[5] Sciurus Tennentii, *Layard*.

[6] Sciuropterus Layardi, *Kelaart*.

[7] There is a rat found only in the Cinnamon Gardens at Colombo, Mus Ceylonus, *Kelaart;* and a mouse which Dr. Kelaart discovered at Trincomalie, M. fulvidi-ventris, *Blyth*, both peculiar to Ceylon. Dr. TEMPLETON has noticed a little shrew (Corsira purpurascens, *Mag. Nat. Hist.* 1855, p. 238) at Neuera-ellia, not as yet observed elsewhere.

[8] Bos cavifrons, *Hodgs.;* B. frontalis, *Lamb.*

[9] Felis jubata, *Schreb.*

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and collections made up to the period of my leaving the colony in 1850. It has been considered expedient to exclude a few individuals which have not had the advantage of a direct comparison with authentic specimens, either at Calcutta or in England. This will account for the omission of a number which have appeared in other catalogues, but of which many, though ascertained to exist, have not been submitted to this rigorous process of identification.

The greater portion of the species of mammals and birds contained in these lists will be found, with suitable references to the most accurate descriptions, in the admirable catalogue of the collection at the India House, now in course of publication under the care of Dr. Horsfield. This work cannot be too highly extolled, not alone for the scrupulous fidelity with which the description of each species is referred to its first discoverer, but also for the pains which have been taken to elaborate synonymes and to collate from local periodicals and other sources, little accessible to ordinary inquirers, such incidents and traits as are calculated to illustrate characteristics and habits.

Quadrumana.

Presbytes cephalopterus, *Zimm.*
ursinus, *Blyth.*
Priamus, *Elliot & Blyth.*
Thersites, *Blyth.*
Macacus pileatus, *Shaw & Desm.*
Loris gracilis, *Geoff.*

Cheiroptera.

Pteropus Edwardsii, *Geoff.*
Leschenaultii, *Dum.*
Cynopterus marginatus, *Hamilt.*
Megaderma spasma, *Linn.*
lyra, *Geoff.*
Rhinolophus *affinis*, *Horsf.*
Hipposideros murinus, *Elliot.*
speoris, *Elliot.*
armiger, *Hodgs.*
vulgaris, *Horsf.*
Kerivoula picta, *Pall.*
Taphozous longimanus, *Hardw.*
Scotophilus Coromandelicus, *F. Cuv.*
adversus, *Horsf.*
Temminkii, *Horsf.*
Tickelli, *Blyth.*
Heathii.

Carnivora.

Sorex cœrulescens, *Shaw.*
ferrugineus, *Kelaart.*
serpentarius, *Is. Geoff.*
montanus, *Kelaart.*
Feroculus macropus, *Kelaart.*
Ursus labiatus, *Blainv.*
Lutra nair, *F. Cuv.*
Canis aureus, *Linn.*
Viverra Indica, *Geoff.*, *Hodgs.*
Cynictis Maccarthiæ, *Gray.*
Herpestes vitticollis, *Benn.*
griseus, *Gm.*
Smithii, *Gray.*
fulvescens, *Kelaart,*
Paradoxurus typus, *F. Cuv.*
Ceylonicus, *Pall.*
Felis pardus, *Linn.*
chaus, *Guldens.*
viverrinus, *Benn.*

Rodentia.

Sciurus macrurus, *Forst.*
Tennentii, *Layard.*
penicillatus, *Leach.*
trilineatus, *Waterh.*
Sciuropterus Layardi, *Kelaart.*
Pteromys petaurista, *Pall.*
Mus bandicota, *Bechst.*
Kok, *Gray.*
rufescens, *Gray.*
nemoralis, *Blyth.*
Indicus, *Geoff.*
fulvidiventris, *Blyth.*
Nesoki *Hardwickii*, *Gray.*
Golunda Neuera, *Kelaart.*
Ellioti, *Gray.*
Gerbillus Indicus, *Hardw.*

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Lepus nigricollis, *F. Cuv.*
Hystrix leucurus, *Sykes.*

Edentata.

Manis pentadactyla, *Linn.*

Pachydermata.

Elephas Indicus, *Linn.*
Sus Indicus, *Gray.*
Zeylonicus, *Blyth.*

Ruminantia.

Moschus meminna, *Erxl.*
Stylocerus muntjac, *Horsf.*
Axis maculata, *H. Smith.*
Rusa Aristotelis, *Cuv.*

Cetacea.

Halicore dugung, *F. Cuv.*

NOTE (A.)

Parasite of the Bat.

One of the most curious peculiarities connected with the bats is their singular parasite, the Nycteribia.[1] On cursory observation, this creature appears to have neither head, antennæ, eyes, nor mouth; and the earlier observers of its structure assured themselves that the place of the latter was supplied by a cylindrical sucker, which, being placed between the shoulders, the creature had no option but to turn on its back to feed. This apparent inconvenience was thought to have been compensated for by another anomaly: its three pairs of legs, armed with claws, being so arranged that they seemed to be equally distributed over its upper and under sides, the creature being thus enabled to use them like hands, and to grasp the strong hairs above it while extracting its nourishment. It moves by rolling itself rapidly along, rotating like a wheel on the extremities of its spokes, or like the clown in a pantomime hurling himself forward on hands and feet alternately. Its celerity is so great that Colonel Montague, who was one of the first to describe it minutely[2], says its speed exceeds that of any known insect, and as its joints are so flexible as to yield in every direction (like what mechanics call a "ball and socket"), its motions are exceedingly grotesque as it tumbles through the fur of the bat.

To enable it to attain its marvellous velocity, each foot is

[1] This extraordinary creature had formerly been discovered only on a few European bats. Joinville figured one which he found on the large roussette (the flying-fox), and says he had seen another on a bat of the same family. Dr. Templeton observed them in Ceylon in great abundance on the fur of the *Scotophilus Coromandelicus*, and they will, no doubt, be found on many others.

[2] Celeripes vespertilionis, *Mont. Lin. Trans.* xi. p. 11.

armed with two sharp hooks, with elastic pads opposed to them, so that the hair can not only be rapidly seized and firmly held, but as quickly disengaged as the creature whirls away in its headlong career.

The insects to which it bears the nearest affinity are the *Hippoboscidæ*, or "spider flies," that infest birds and horses, but, unlike them, it is unable to fly.

Its strangest peculiarity, and that which gave rise to the belief that it is headless, is its faculty when at rest of throwing back its head and pressing it close between its shoulders till the under side becomes uppermost, not a vestige of head being discernible where we would naturally look for it, and the whole seeming but a casual inequality on its back.

On closer examination this apparent tubercle is found to have a leathery attachment like a flexible neck, and by a sudden jerk the little creature is enabled to project it forward into its normal position, when it is discovered to be furnished with a mouth, antennæ, and four eyes, two on each side.

The organisation of such an insect is a marvellous adaptation of physical form to special circumstances. As the nycteribia has to make its way through fur and hairs, its feet are furnished with prehensile hooks that almost convert them into hands; and being obliged to conform to the sudden flights of its patron, and accommodate itself to inverted positions, all attitudes are rendered alike to it by the arrangement of its limbs, which enables it, after every possible gyration, to find itself always on its feet.

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CHAP. II.

BIRDS.

Of the *Birds* of the island, upwards of three hundred and twenty species have been indicated, for which we are indebted to the persevering labours of Dr. Templeton, Dr. Kelaart, and Mr. Layard; but many yet remain to be identified. In fact, to the eye of a stranger, their prodigious numbers, and especially the myriads of waterfowl which, notwithstanding the presence of the crocodiles, people the lakes and marshes in the eastern provinces, form one of the marvels of Ceylon.

In the glory of their plumage, the birds of the interior are surpassed by those of South America and Northern India; and the melody of their song will bear no comparison with that of the warblers of Europe, but the want of brilliancy is compensated by their singular grace of form, and the absence of prolonged and modulated harmony by the rich and melodious tones of their clear and musical calls. In the elevations of the Kandyan country there are a few, such as the robin of Neuera-ellia [1] and the long-tailed thrush [2], whose song rivals that of their European namesakes; but, far beyond the attraction of their notes, the traveller rejoices in the flute-like voices of the Oriole, the Dayal-bird [3], and some others equally charming; when, at the first dawn of day, they wake the forest with their clear *reveille.*

It is only on emerging from the dense forests, and

[1] Pratincola atrata, *Kelaart.*

[2] Kittacincla macroura, *Gm.*

[3] Copsychus saularis, *Linn.* Called by the Europeans in Ceylon the "Magpie Robin." This is not to be confounded with the other popular favourite, the "Indian Robin" (Thamnobia fulicata, *Linn.*), which is "never seen in the unfrequented jungle, but, like the coco-nut palm, which the Singhalese assert will only flourish within the sound of the human voice, it is always found near the habitations of men."—E. L. Layard.

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coming into the vicinity of the lakes and pasture of the low country, that birds become visible in great quantities. In the close jungle one occasionally hears the call of the copper-smith [1], or the strokes of the great orange-coloured woodpecker [2] as it beats the decaying trees in search of insects, whilst clinging to the bark with its finely-pointed claws, and leaning for support upon the short stiff feathers of its tail. And on the lofty branches of the higher trees, the hornbill [3] (the toucan of the East), with its enormous double casque, sits to watch the motions of the tiny reptiles and smaller birds on which it preys, tossing them into the air when seized, and catching them in its gigantic mandibles as they fall.[4] The remarkable excrescence on the beak of this extraordinary bird may serve to explain the statement of the Minorite friar Odoric, of Portenau in Friuli, who travelled in Ceylon in the fourteenth century, and brought suspicion on the veracity of his narrative by asserting that he had there seen "*birds with two heads*." [5]

As we emerge from the deep shade and approach the

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[1] The greater red-headed Barbet (Megalaima indica, *Lath.*; M. Philippensis, *var. A. Lath.*), the incessant din of which resembles the blows of a smith hammering a cauldron.

[2] Brachypternus aurantius, *Linn.*

[3] Buceros pica, *Scop.*; B. coronata, *Bodd.* The natives assert that B. pica builds in holes in the trees, and that when incubation has fairly commenced, the female takes her seat on the eggs, and the male closes up the orifice by which she entered, leaving only a small aperture through which he feeds his partner, whilst she successfully guards their treasures from the monkey tribes; her formidable bill nearly filling the entire entrance. See a paper by Edgar L. Layard, Esq. *Mag. Nat. Hist.* March, 1853. Dr. Horsfield had previously observed the same habit in a species of Buceros in Java. (See HORSFIELD and MOORE's *Catal. Birds*, E. I. Comp. Mus. vol. ii.) It is curious that a similar trait, though necessarily from very different instincts, is exhibited by the termites, who literally build a cell round the great progenitrix of the community, and feed her through apertures.

[4] The hornbill is also frugivorous, and the natives assert that when endeavouring to detach a fruit, if the stem is too tough to be severed by his mandibles, he flings himself off the branch so as to add the weight of his body to the pressure of his beak. The hornbill abounds in Cuttack, and bears there the name of "Kuchila-Kai" or Kuchila-eater, from its partiality for the fruit of the Strychnus nux-vomica. The natives regard its flesh as a sovereign specific for rheumatic affections.—*Asiat. Res.* ch. xv. p. 184.

[5] *Itinerarius* FRATRIS ODORICI, de Foro Julii de Portu-vahonis.—HAKLUYT, vol. ii. p. 39.

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park-like openings on the verge of the low country quantities of pea-fowl are to be found either feeding amongst the seeds and nuts in the long grass or sunning themselves on the branches of the surrounding trees. Nothing to be met with in demesnes in England can give an adequate idea either of the size or the magnificence of this matchless bird when seen in his native solitudes. Here he generally selects some projecting branch, from which his plumage may hang free of the foliage, and, if there be a dead and leafless bough, he is certain to choose it for his resting-place, whence he droops his wings and suspends his gorgeous train, or spreads it in the morning sun to drive off the damps and dews of the night.

In some of the unfrequented portions of the eastern province, to which Europeans rarely resort, and where the pea-fowl are unmolested by the natives, their number is so extraordinary that, regarded as game, it ceases to be "sport" to destroy them; and their cries at early morning are so tumultuous and incessant as to banish sleep, and amount to an actual inconvenience. Their flesh is excellent when served up hot, though it is said to be indigestible; but, when cold, it contracts a reddish and disagreeable tinge.

But of all, the most astonishing in point of multitude, as well as the most interesting from their endless variety, are the myriads of aquatic birds and waders which frequent the lakes and watercourses; especially those along the coast near Batticaloa, between the mainland and the sand formations of the shore, and the innumerable salt marshes and lagoons to the south of Trincomalie. These, and the profusion of perching birds, fly-catchers, finches, and thrushes, which appear in the open country, afford sufficient quarry for the raptorial and predatory species — eagles, hawks, and falcons — whose daring sweeps and effortless undulations are striking objects in the cloudless sky.

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I. Accipitres. *Eagles.* — The Eagles, however, are small, and as compared with other countries rare; except, perhaps, the crested eagle[1], which haunts the mountain provinces and the lower hills, disquieting the peasantry by its ravages amongst their poultry; and the gloomy serpent eagle[2], which, descending from its eyrie in the lofty jungle, and, uttering a loud and plaintive cry, sweeps cautiously around the lonely tanks and marshes, where it feeds upon the reptiles on their margin. The largest eagle is the great sea Erne[3], seen on the northern coasts and the salt lakes of the eastern provinces, particularly when the receding tide leaves bare an expanse of beach, over which it hunts, in company with the fishing eagle[4], sacred to Siva. Unlike its companions, however, the sea eagle rejects garbage for living prey, and especially for the sea snakes, which abound on the northern coasts. These it seizes by descending with its wings half closed, and, suddenly darting down its talons, it soars aloft again with its writhing victim.[5]

Hawks. — The beautiful Peregrine Falcon[6] is rare, but the Kestrel[7] is found almost universally; and the bold and daring Goshawk[8] wherever wild crags and precipices afford safe breeding places. In the district of Anarajapoora, where it is trained for hawking, it is usual, in lieu of a hood, to darken its eyes by means of a silken thread passed through holes in the eyelids. The ignoble birds of prey, the Kites[9], keep close by the

[1] Spizaëtus limnaëtus, *Horsf.*
[2] Hæmatornis cheela, *Daud.*
[3] Pontoaëtus leucogaster, *Gmel.*
[4] Haliastur indus, *Bodd.*
[5] E. L. Layard. Europeans have given this bird the name of the "Brahminy Kite," probably from observing the superstitious feeling of the natives regarding it, who believe that when two armies are about to engage its appearance prognosticates victory to the party over whom it hovers.
[6] Falco peregrinus, *Linn.*
[7] Tinnunculus alaudarius, *Briss.*
[8] Astur trivirgatus, *Temm.*
[9] Milvus govinda, *Sykes.* Dr. Hamilton Buchanan remarks that when gorged this bird delights to sit on the entablature of buildings, exposing its back to the hottest rays of the sun, placing its breast against the wall, and stretching out its wings *exactly as the Egyptian Hawk is represented on their monuments.*

shore, and hover round the returning boats of the fishermen to feast on the fry rejected from their nets.

Owls. — Of the nocturnal accipitres the most remarkable is the brown owl, which, from its hideous yell, has acquired the name of the "Devil-Bird."[1] The Singhalese regard it literally with horror, and its scream by night in the vicinity of a village is bewailed as the harbinger of approaching calamity.

II. PASSERES. *Swallows.* — Within thirty-five miles of Caltura, on the western coast, are inland caves the resort of the Esculent Swift[2], which there builds the "edible bird's nest," so highly prized in China. Near the spot a few Chinese immigrants have established themselves, who rent the royalty from the government, and make an annual export of their produce. But the Swifts are not confined to this district, and caves containing them have been found far in the interior, a fact which complicates the still unexplained mystery of the composition of their nest; and notwith-

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[1] Syrnium indranee, *Sykes.* The horror of this nocturnal scream was equally prevalent in the West as in the East. Ovid introduces it in his *Fasti*, L. vi. l. 139; and Tibullus in his Elegies, L. i. El. 5. Statius says—

"Nocturnæque gemunt striges, et feralia bubo
Damna canens." Theb. iii. l. 511.

But Pliny, l. xi. c. 93, doubts as to what bird produced the sound;—and the details of Ovid's description do not apply to an owl.

Mr. Mitford, of the Ceylon Civil Service, to whom I am indebted for many valuable notes relative to the birds of the island, regards the identification of the Singhalese Devil-Bird as open to similar doubt: he says—"The Devil-Bird is not an owl. I never heard it until I came to Kornegalle, where it haunts the rocky hill at the back of Government-house. Its ordinary note is a magnificent clear shout like that of a human being, and which can be heard at a great distance, and has a fine effect in the silence of the closing night. It has another cry like that of a hen just caught, but the sounds which have earned for it its bad name, and which I have heard but once to perfection, are indescribable, the most appalling that can be imagined, and scarcely to be heard without shuddering; I can only compare it to a boy in torture, whose screams are being stopped by being strangled. I have offered rewards for a specimen, but without success. The only European who had seen and fired at one agreed with the natives that it is of the size of a pigeon, with a long tail. I believe it is a Podargus or Night Hawk." In a subsequent note he further says—"I have since seen two birds by moonlight, one of the size and shape of a cuckoo, the other a large black bird, which I imagine to be the one which gives these calls."

[2] Collocalia brevirostris, *McClell.*; C. nidifica, *Gray.*

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standing the power of wing possessed by these birds, adds something to the difficulty of believing that it consists of glutinous algæ.[1] In the nests brought to me there was no trace of organisation; and whatever may be the original material, it is so elaborated by the swallow as to present somewhat the appearance and consistency of strings of isinglass. The quantity of these nests exported from Ceylon is trifling.

Kingfishers. — In solitary places, where no sound breaks the silence except the gurgle of the river as it sweeps round the rocks, the lonely Kingfisher sits upon an overhanging branch, his turquoise plumage hardly less intense in its lustre than the deep blue of the sky above him; and so intent is his watch upon the passing fish that intrusion fails to scare him from his post; the emblem of vigilance and patience.

Sun Birds. — In the gardens the Sun Birds[2] (known as the Humming Birds of Ceylon) hover all day long, attracted by the plants over which they hang, poised on their glittering wings, and inserting their curved beaks to extract the tiny insects that nestle in the flowers. Perhaps the most graceful of the birds of Ceylon in form and motions, and the most chaste in colouring, is that which Europeans call "the Bird of Paradise,"[3] and the natives "the Cotton Thief," from the circumstance that its tail consists of two long white feathers, which stream behind it as it flies. Mr. Layard says: — "I have often watched them, when seeking their insect prey, turn suddenly on their perch and *whisk their long tails with a jerk* over the bough, as if to protect them from injury."

The Bulbul. — The *Condatchee Bulbul*[4], which, from

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[1] An epitome of what has been written on this subject will be found in *Dr. Horsfield's Catalogue* of the Birds in the E. I. Comp. Museum, vol. i. p. 101, etc.

[2] Nectarina zeylanica, *Linn.*

[3] Tchitrea paradisi, *Linn.*

[4] Pycnonotus hæmorrhous, *Gmel.*

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the crest on its head, is called by the Singhalese the "Konda Coorola," or *Tuft bird*, is regarded by the natives as the most "*game*" of all birds; and the training it to fight was one of the duties intrusted by the Kings of Kandy to the Kooroowa, or Bird Head-man. For this purpose the Bulbul is taken from the nest as soon as the sex is distinguishable by the tufted crown; and being secured by a string, is taught to fly from hand to hand of its keeper. When pitted against an antagonist, such is the obstinate courage of this little creatrue that it will sink from exhaustion rather than release its hold. This propensity, and the ordinary character of its notes, render it impossible that the Bulbul of India can be identical with the Bulbul of Iran, the "Bird of a Thousand Songs,"[1] whose delicate passion for the rose gives a plaintive character to its note.

Tailor-Bird. — *The Weaver-Bird.* — The tailor-bird[2] having completed her nest, sewing together the leaves by passing through them a cotton thread twisted by the creature herself, leaps from branch to branch to testify her happiness by a clear and merry note — and the Indian weaver[3], a still more ingenious artist, having woven its dwelling with grass something into the form of a bottle, with a prolonged neck, hangs it from a projecting branch with its entrance inverted so as to baffle the approaches of its enemies, the tree snakes and other reptiles. The natives assert that the male bird carries fire flies to the nest, fastening them to its sides by a particle of soft mud, and Mr. Layard assures me that although he has never succeeded in finding the fire fly,

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[1] "*Hazardasitaum,*" the Persian name for the bulbul. "The Persians," according to Zakary ben Mohamed al Caswini, "say the bulbul has a passion for the rose, and laments and cries when he sees it pulled."—OUSELEY'S *Oriental Collections,* vol. i. p. 16. According to Pallas it is the true nightingale of Europe, Sylvia luscinia, which the Armenians call *boulboul,* and the Crim-Tartars *byl-byl-i.*

[2] Orthotomus longicauda, *Gmel.*

[3] Ploceus baya, *Blyth;* P. philippinus, *Auct.*

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the nest of the male bird (for the female occupies another during incubation) invariably contains a patch of mud on each side of the perch.

Crows. — Of all the Ceylon birds of this order the most familiar and notorious is the small glossy crow, whose shining black plumage shot with blue has obtained for him the title of *Corvus splendens.*[1] They frequent the towns in companies, and domesticate themselves in the close vicinity of every house; and it may possibly serve to account for the familiarity and audacity which they exhibit in their intercourse with men, that the Dutch during their sovereignty in Ceylon enforced severe penalties against any one killing a crow, under the belief that they are instrumental in extending the growth of cinnamon by feeding on the fruit, and thus disseminating the undigested seed.[2]

So accustomed are the natives to its presence and exploits, that, like the Greeks and Romans, they have made the movements of the crow the basis of their auguries; and there is no end to the vicissitudes of good and evil fortune which may not be predicted from the direction of their flight, the hoarse or mellow notes of their croaking, the variety of trees on which they rest, and the numbers in which they are seen to assemble. All day long they are engaged in watching either the offal of the offices, or the preparation for meals in the dining-room: and as doors and windows are necessarily opened to relieve the heat, nothing is more common than the passage of crows across the room, lifting on the wing some ill-guarded morsel from the dinner-table.

No article, however unpromising its quality, provided only it be portable, can with safety be left un-

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[1] There is another species, the *C. culminatus*, so called from the convexity of its bill; but though seen in the towns, it lives chiefly in the open country, and may be constantly observed wherever there are buffaloes, perched on their backs and engaged, in company with the small Minah (*Acridotheres tristis*), in freeing them from ticks.

[2] Wolf's *Life and Adventures*, p. 117.

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guarded in any apartment accessible to them. The contents of ladies' work-boxes, kid gloves, and pocket handkerchiefs vanish instantly if exposed near a window or open door. They open paper parcels to ascertain the contents; they will undo the knot on a napkin if it encloses anything eatable, and I have known a crow to extract the peg which fastened the lid of a basket in order to plunder the provender within.

On one occasion a nurse seated in a garden adjoining a regimental mess-room, was terrified by seeing a bloody clasp-knife drop from the air at her feet; but the mystery was explained on learning that a crow, which had been watching the cook chopping mince-meat, had seized the moment when his head was turned to carry off the knife.

One of these ingenious marauders, after vainly attitudinising in front of a chained watch-dog, which was lazily gnawing a bone, and after fruitlessly endeavouring to divert his attention by dancing before him, with head awry and eye askance, at length flew away for a moment, and returned bringing with it a companion who perched itself on a branch a few yards in the rear. The crow's grimaces were now actively renewed, but with no better result, till its confederate, poising himself on his wings, descended with the utmost velocity, striking the dog upon the spine with all the force of his beak. The *ruse* was successful: the dog started with surprise and pain, but not quickly enough to seize his assailant, whilst the bone he had been gnawing disappeared the instant his head was turned. Two well-authenticated instances of the recurrence of this device came within my knowledge at Colombo, and attest the sagacity and powers of communication and combination possessed by these astute and courageous birds.

On the approach of evening the crows assemble in noisy groups along the margin of the fresh-water lake which surrounds Colombo on the eastern side; here for an hour or two they enjoy the luxury of the bath, tossing

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the water over their shining backs, and arranging their plumage decorously, after which they disperse, each taking the direction of his accustomed quarters for the night.[1]

During the storms which usher in the monsoon, it has been observed, that when coco-nut palms are struck by lightning, the destruction frequently extends beyond a single tree, and from the contiguity and conduction of the spreading leaves, or some other peculiar cause, large groups will be affected by a single flash, a few killed instantly, and the rest doomed to rapid decay. In Belligam Bay, a little to the east of Point-de-Galle, a small island, which is covered with coco-nuts, has acquired the name of "Crow Island," from being the resort of those birds, which are seen hastening towards it in thousands towards sunset. A few years ago, during a violent storm of thunder, such was the destruction of the crows that the beach for some distance was covered with a black line of their remains, and the grove on which they had been resting was to a great extent destroyed by the same flash.[2]

III. Scansores. *Parroquets.*— Of the Psittacidæ the only examples are the parroquets, of which the most renowned is the *Palæornis Alexandri*, which has the historic distinction of bearing the name of the great conqueror of India, having been the first of its race introduced to the knowledge of Europe on the return of his expedition. An idea of their number may be formed from the following statement of Mr. Layard, as to the multitudes which are found on the western coast. "At Chilaw I have seen such vast flights of parroquets coming to roost

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[1] A similar habit has been noticed in the damask Parrots of Africa (*Palæornis fuscus*), which daily resort at the same hour to their accustomed water to bathe.

[2] Similar instances are recorded in other countries of sudden mortality amongst crows to a prodigious extent, but whether occasioned by lightning seems uncertain. In 1839 thirty-three thousand dead crows were found on the shores of a lake in the county Westmeath in Ireland after a storm. — Thompson's *Nat. Hist. Ireland*, vol. i. p. 319, and Patterson in his Zoology, p. 356, mentions other cases.

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in the coco-nut trees which overhang the bazaar, that their noise drowned the Babel of tongues bargaining for the evening provisions. Hearing of the swarms which resorted to this spot, I posted myself on a bridge some half mile distant, and attempted to count the flocks which came from a single direction to the eastward. About four o'clock in the afternoon, straggling parties began to wend towards home, and in the course of half an hour the current fairly set in. But I soon found that I had no longer distinct flocks to count, it became one living screaming stream. Some flew high in the air till right above their homes, and dived abruptly downward with many evolutions till on a level with the trees; others kept along the ground and dashed close by my face with the rapidity of thought, their brilliant plumage shining with an exquisite lustre in the sun-light. I waited on the spot till the evening closed, when I could hear, though no longer distinguish, the birds fighting for their perches, and on firing a shot they rose with a noise like the 'rushing of a mighty wind,' but soon settled again, and such a din commenced as I shall never forget; the shrill screams of the birds, the fluttering of their innumerable wings, and the rustling of the leaves of the palm trees, was almost deafening, and I was glad at last to escape to the Government Rest House."[1]

IV. COLUMBIDÆ. *Pigeons.*—Of pigeons and doves there are at least a dozen species; some living entirely on trees[2] and never alighting on the ground; others, notwithstanding the abundance of food and warmth, are migratory[3], allured, as the Singhalese allege, by the ripening of the cinnamon berries, and hence one species is known in the southern provinces as the "Cinnamon Dove." Others feed on the fruits of the banyan: and it is probably to their instrumentality that this mar-

[1] *Annals of Nat. Hist.* vol. xiii. p. 263.

[2] Treron bicincta, *Jerd.*

[3] *Alsocomus puniceus*, the "Season Pigeon" of Ceylon, so called from its periodical arrival and departure.

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vellous tree chiefly owes its diffusion, its seeds being carried by them to remote localities. A very beautiful pigeon, peculiar to the mountain range, discovered in the lofty trees at Neuera-ellia, has, in compliment to the Viscountess Torrington, been named *Carpophaga Torringtoniæ.*

Another, called by the natives *neela-cobeya*[1], although strikingly elegant both in shape and colour, is still more remarkable for the singularly soothing effect of its low and harmonious voice. A gentleman who has spent many years in the jungle, in writing to me of this bird and of the effects of its melodious song, says, that "its soft and melancholy notes, as they came from some solitary place in the forest, were the most gentle sounds I ever listened to. Some sentimental smokers assert that the influence of the propensity is to make them feel *as if they could freely forgive all who had ever offended them*, and I can say with truth such has been the effect on my own nerves of the plaintive murmurs of the neela-cobeya, that sometimes, when irritated, and not without reason, by the perverseness of some of my native followers, the feeling has almost instantly subsided into placidity on suddenly hearing the loving tones of these beautiful birds."

V. Gallinæ. *The Ceylon Jungle-fowl.* — The jungle-fowl of Ceylon[2] is shown by the peculiarity of its plumage to be distinct from the Indian species. It has never yet bred or survived long in captivity, and no living specimens have been successfully transmitted to Europe. It abounds in all parts of the island, but chiefly in the lower ranges of mountains; and one of the vivid memorials which are associated with our journeys through the hills, is its clear cry, which sounds like a person calling "George Joyce," and at early morning rises amidst mist and dew, giving

[1] Chalcophaps Indicus, *Linn.* [2] Gallus Lafayetti, *Lesson.*

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life to the scenery that has scarcely yet been touched by the sun light.

VI. GRALLÆ.—On reaching the marshy plains and shallow lagoons on either side of the island, the astonishment of the stranger is excited by the endless multitudes of stilt-birds and waders which stand in long array within the wash of the water, or sweep in vast clouds above it. Ibises[1], storks[2], egrets, spoonbills[3], herons[4], and the smaller races of sand larks and plovers, are seen busily traversing the wet sands in search of the red worm which burrows there, or peering with steady eye to watch the motions of the small fry and aquatic insects in the ripple on the shore.

VII. ANSERES.—Preeminent in size and beauty, the tall *flamingoes*[5], with rose-coloured plumage, line the beach in long files. The Singhalese have been led, from their colour and their military order, to designate them the "*English Soldier birds.*" Nothing can be more startling than the sudden flight of these splendid creatures when alarmed, their strong wings beating the air like distant thunder, and as they soar over head, the flock which appeared almost white but a moment before, is converted into crimson by the sudden display of the red lining of their wings. A peculiarity in the beak of the flamingo has scarcely attracted due attention, as a striking illustration of creative wisdom in adapting the organs of animals to their local necessities. The upper mandible, which is convex in other birds, is in them flattened, whilst the lower, instead of being flat, is convex. To those who have had an opportunity of witnessing the action of the bird in its native haunts, the expediency of this arrangement is at once apparent. The flamingo, to counteract the extraordinary

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[1] Tantalus leucocephalus, and Ibis falcinellus.

[2] The violet-headed Stork (Ciconia leucocephala).

[3] Platalea leucorodia, *Linn.*

[4] Ardea cinerea. A. purpurea.

[5] Phœnicopterus roseus, *Pallas.*

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length of its legs, is provided with a proportionately long neck, so that in feeding in shallow water the crown of the head becomes inverted and the upper mandible brought into contact with the bottom; where its flattened surface qualifies it for performing the functions of the lower one in birds of the same class; and the edges of both being laminated, it is thus enabled, like the duck, by the aid of its fleshy tongue, to sift its food before swallowing.

Floating on the surface of the deeper water, are fleets of the Anatidæ, the Coromandel teal [1], the Indian hooded gull [2], the Caspian tern, and a countless variety of ducks and smaller fowl. Pelicans [3] in great numbers resort to the mouths of the rivers, taking up their position at sunrise on some projecting rock; from which to dart on the passing fish, and returning far inland at night to their retreats among the trees which overshadow some ruined watercourse or deserted tank.

Of the birds familiar to European sportsmen, partridges and quails are to be had at all times; the woodcock has occasionally been shot in the hills, and the ubiquitous snipe, which arrives in September from Southern India, is identified not alone by the eccentricity of its flight, but by retaining in high perfection the qualities which have endeared it to the gastronome at home. But the magnificent pheasants which inhabit the Himalayan range and the woody hills of the Chin-Indian peninsula, have no representative amongst the tribes that people the woods of Ceylon; although a bird believed to be a pheasant has more than once been seen in the jungle, close to Rambodde on the road to Neuera-ellia.

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[1] Nettapus Coromandelianus, *Gmel.*
[2] Larus brunnicephalus, *Jerd.*
[3] Pelicanus Philippensis, *Gmel.*

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List of Ceylon Birds.

In submitting this catalogue of the birds of Ceylon, I am anxious to state that the copious mass of its contents is mainly due to the untiring energy and exertions of my friend, Mr. E. L. Layard. Nearly every bird in the list has fallen by his gun; so that the most ample facilities have been thus provided, not only for extending the limited amount of knowledge which formerly existed on this branch of the zoology of the island; but for correcting, by actual comparison with recent specimens, the errors which had previously prevailed as to imperfectly described species. The whole of Mr. Layard's fine collection is at present in England.

Accipitres.

Aquila Bonelli, *Temm.*
 pennata, *Gm.*
Spizaëtus Nipalensis, *Hodgs.*
 limnæëtus, *Horsf.*
Ictinaëtus Malayensis, *Reinw.*
Hæmatornis cheela, *Daud.*
 spilogaster, *Blyth.*
Pontoaëtus leucogaster, *Gm.*
 ichthyaëtus, *Horsf.*
Haliastur Indus, *Bodd.*
Falco peregrinus, *Linn.*
 peregrinator, *Sund.*
Tinnunculus alaudarius, *Briss.*
Hypotriorchis chicquera, *Daud.*
Baza lophotes, *Cuv.*
Milvus govinda, *Sykes.*
Elanus melanopterus, *Daud.*
Astur trivirgatus, *Temm.*
Accipiter badius, *Gm.*
Circus, Swainsonii, *A. Smith.*
 cineraseens, *Mont.*
 melanoleucos, *Gm.*
 æruginosus, *Linn.*
Athene castonatus, *Blyth.*
 scutulata, *Raffles.*
Ephialtes scops, *Linn.*
 lempijii, *Horsf.*
 sunia, *Hodgs.*
Ketupa Ceylonensis, *Gm.*
Syrnium Indranee, *Sykes.*
Strix Javanica, *Gm.*

Passeres.

Batrachostomus moniliger, *Layard.*
Caprimulgus Mahrattensis, *Sykes.*
 Kelaarti, *Blyth.*
 Asiaticus, *Lath.*
Cypselus batassiensis, *Gray.*
 melba, *Linn.*
 affinis, *Gray.*
Macropteryx coronatus, *Tickell.*
Collocalia brevirostris, *McClel.*
Acanthylis caudacuta, *Lath.*
Hirundo panayana, *Gm.*
 daurica, *Linn.*
 hyperythra, *Layard.*
 domicola, *Jerdon.*
Coracias Indica, *Linn.*
Harpactes fasciatus, *Gm.*
Eurystomus orientalis, *Linn.*
Halcyon Capensis, *Linn.*
 atricapillus, *Gm.*
 Smyrnensis, *Linn.*
Ceyx tridactyla, *Linn.*
Alcedo Bengalensis, *Gm.*
Ceryle rudis, *Linn.*
Merops Philippinus, *Linn.*
 viridis, *Linn.*
 quincticolor, *Vieill.*
Upupa nigripennis, *Gould.*
Nectarina Zeylanica, *Linn.*
 minima, *Sykes.*
 Asiatica, *Lath.*
 Lotenia, *Linn.*
Dicæum minimum, *Tickell.*
Phyllornis Malabarica, *Lath.*
 Jerdoni, *Blyth.*
Dendrophila frontalis, *Horsf.*
Piprisoma agile, *Blyth.*
Orthotomus longicauda, *Gm.*
Cisticola cursitans, *Frankl.*
 omalura, *Blyth.*
Drymoica valida, *Blyth.*
 inornata, *Sykes.*
Prinia socialis, *Sykes.*
Acrocephalus dumetorum, *Blyth.*

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Phyllopneuste nitidus, *Blyth.*
montanus, *Blyth.*
viridanus, *Blyth.*
Copsychus saularus, *Linn.*
Kittacincla macrura, *Gm.*
Pratincola caprata, *Linn.*
atrata, *Kelaart.*
Calliope cyanea, *Hodgs.*
Thamnobia fulicata, *Linn.*
Cyanecula Suevica, *Linn.*
Sylvia affinis, *Blyth.*
Parus cinerius, *Vieill.*
Zosterops palpebrosus, *Temm.*
Iöra Zeylanica, *Gm.*
typhia, *Linn.*
Motacilla sulphurea, *Bechs.*
Indica, *Gm.*
Madraspatana, *Briss.*
Budytes viridis, *Gm.*
Anthus rufulus, *Vieill.*
Richardii, *Vieill.*
striolatus, *Blyth.*
Brachypteryx Palliseri, *Kelaart.*
Alcippe nigrifrons, *Blyth.*
Pitta brachyura, *Jerd.*
Oreocincla spiloptera, *Blyth.*
Merula Wardii, *Jerd.*
Kinnisii, *Kelaart.*
Zoothera imbricata, *Layard.*
Garrulax cinereifrons, *Blyth.*
Pormatorhinus melanurus, *Blyth.*
Malacocercus refuscens, *Blyth.*
griseus, *Gm.*
striatus, *Swains.*
Pellorneum fuscocapillum, *Blyth.*
Dumetia albogularis, *Blyth.*
Chrysomma Sinense, *Gm.*
Oriolus melanocephalus, *Linn.*
Indicus, *Briss.*
Criniger ictericus, *Stickl.*
Pycnonotus penicillatus, *Kelaart.*
flavirictus, *Strickl.*
hæmorrhous, *Gm.*
atricapillus, *Vieill.*
Hemipus picatus, *Sykes.*
Hypsipetes Nilgherriensis, *Jerd.*
Cyornis rubeculoïdes, *Vig.*
Myiagra azurea, *Bodd.*
Cryptolopha cinereocapilla, *Vieill.*
Leucocerca compressirostris, *Blyth.*
Tchitrea paradisi, *Linn.*
Butalis latirostris, *Raffles.*
Muttui, *Layard.*
Stoparola melanops, *Vig.*
Pericrocotus flammeus, *Forst.*
peregrinus, *Linn.*
Campephaga Macei, *Less.*
Sykesii, *Strickl.*
Artamus fuscus, *Vieill.*
Edolius paradiseus, *Gm.*
Dicrurus macrocercus, *Vieill.*
edoliformis, *Blyth.*
longicaudatus, *A. Hay.*
leucopygialis, *Blyth.*
cœrulescens, *Linn.*
Irena puella, *Lath.*
Lanius superciliosus, *Lath.*
erythronotus, *Vig.*
Tephrodornis affinis, *Blyth.*
Cissa puella, *Blyth & Layard.*
Corvus splendens, *Vieille.*
culminatus, *Sykes.*
Eulabes religiosa, *Linn.*
ptilogenys, *Blyth.*
Pastor roseus, *Linn.*
Hetærornis pagodarum, *Gm.*
albifrontata, *Layard.*
Acridotheres tristis, *Linn.*
Ploceus manyar, *Horsf.*
baya, *Blyth.*
Munia undulata, *Latr.*
Malabarica, *Linn.*
Malacca, *Linn.*
rubronigra, *Hodgs.*
striata, *Linn.*
pectoralis, *Jerd.*
Passer Indicus, *Jard. & Selb.*
Alauda gulgula, *Frank.*
Malabarica, *Scop.*
Pyrrhulauda grisea, *Scop.*
Mirafra, affinis, *Jerd.*
Buceros gingalensis, *Shaw.*
coronata, *Bodd.*

Scansores.

Loriculus Asiaticus, *Lath.*
Palæornis Alexandri, *Linn.*
torquatus, *Briss.*
cyanocephalus, *Linn.*
Calthropæ, *Layard.*
Layardi, *Blyth.*
Megalaima Indica, *Latr.*
Zeylanica, *Gmel.*
flavifrons, *Cuv.*
rubicapilla, *Gm.*
Picus gymnophthalmus, *Blyth.*
Mahrattensis, *Lath.*
Macei, *Vieill.*
Gecinus chlorophanes, *Vieill.*
Brachypternus aurantius, *Linn.*
Ceylonus, *Forst.*
rubescens, *Vieill.*
Stricklandi, *Layard.*
Micropternus gularis, *Jerd.*
Centropus rufipennis, *Illiger.*
chlororhynchos, *Blyth.*
Oxylophus melanoleucos, *Gm.*
Coramandus, *Linn.*
Eudynamys orientalis, *Linn.*
Cuculus Bartletti, *Layard.*
striatus, *Drapiez.*
canorus, *Linn.*
Polyphasia tenuirostris, *Gray.*
Sonneratii, *Lath.*

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Hierococcyx varius, *Vahl.*
Surniculus dicruroïdes, *Hodgs.*
Phœnicophaus pyrrhocephalus, *Forst.*
Zanclostomus viridirostris, *Jerd.*

Columbæ.

Treron bicincta, *Jerd.*
  flavogularis, *Blyth.*
  Pompadoura, *Gm.*
  chlorogaster, *Blyth.*
Carpophaga pusilla, *Blyth.*
  Torringtoniæ, *Kelaart.*
Alsocomus puniceus, *Tickel.*
Columba intermedia, *Strickl.*
Turtur risorius, *Linn.*
  Suratensis, *Lath.*
  humilis, *Temm.*
  orientalis, *Lath.*
Chalcophaps Indicus, *Linn.*

Gallinæ.

Pavo cristatus, *Linn.*
Gallus Lafayetti, *Lesson.*
Galloperdix bicalcaratus, *Linn.*
Francolinus Ponticerianus, *Gm.*
Perdicula agoondah, *Sykes.*
Coturnix Chinensis, *Linn.*
Turnix ocellatus *var.* Bengalensis, *Blyth.*
  " " *var.* taigoor, *Sykes.*

Grallæ.

Esacus recurvirostris, *Cuv.*
Œdicnemus crepitans, *Temm.*
Cursorius Coromandelicus, *Gm.*
Lobivanellus, bilobus, *Gm.*
  Goensis, *Gm.*
Charadrius virginicus, *Bechs.*
Hiaticula Philippensis, *Scop.*
  cantiana, *Lath.*
  Leschenaultii, *Less.*
Strepsilas interpres, *Linn.*
Ardea purpurea, *Linn.*
  cinerea, *Linn.*
  asha, *Sykes.*
  intermedia, *Wagler.*
  garzetta, *Linn.*
  alba, *Linn.*
  bubulcus, *Savig.*
Ardeola leucoptera, *Bodd.*
Ardetta cinnamomea, *Gm.*
  flavicollis, *Lath.*
  Sinensis, *Gm.*
Butoroides Javanica, *Horsf.*
Platalea leucorodia, *Linn.*
Nycticorax griseus, *Linn.*
Tigrisoma melanolopha, *Raffl.*
Mycteria australis, *Shaw.*
Leptophilus Javanica, *Horsf.*
Ciconia leucocephala, *Gm.*
Anastomus oscitans, *Bodd.*
Tantalus leucocephalus, *Gm.*
Geronticus melanocephalus, *Loth.*
Ibis falcinellus, *Linn.*
Numenius arquatus, *Linn.*
  phœopus, *Linn.*
Totanus fuscus, *Linn.*
  ochropus, *Linn.*
  calidris, *Linn.*
  hypoleucos, *Linn.*
  glottoides, *Vigors.*
  stagnalis, *Bechst.*
Actitis glareola, *Gm.*
Tringa minuta, *Leist.*
  subarquata, *Gm.*
Limicola platyrhyncha, *Temm.*
Limosa ægocephala, *Linn.*
Himantopus candidus, *Bon.*
Recurvirostra avocetta, *Linn.*
Hæmatopus ostralegus, *Linn.*
Rhynchœa Bengalensis, *Linn.*
Scolopax rusticola, *Linn.*
Gallinago stenura, *Temm.*
  scolopacina, *Bon.*
  gallinula, *Linn.*
Hydrophasianus Sinensis, *Gm.*
Ortygometra rubiginosa, *Temm.*
Corethura Zeylanica, *Gm.*
Porzana pygmæa, *Nau.*
Rallus striatus, *Linn.*
  Indicus, *Blyth.*
Porphyrio poliocephalus, *Lath.*
Gallinula phœnicura, *Penn.*
  chloropus, *Linn.*
  cristata, *Lath.*

Anseres.

Phœnicopterus ruber, *Linn.*
Sarkidiornis melanonotos, *Penn.*
Nettapus Coromandelianus, *Gm.*
Anas pœcilorhyncha, *Penn.*
Dendrocygnus arcuatus, *Cuv.*
Dafila acuta, *Linn.*
Querquedula crecca, *Linn.*
  circia, *Linn.*
Fuligula rufina, *Pall.*
Spatula clypeata, *Linn.*
Podiceps Philippensis, *Gm.*
Larus brunnicephalus, *Jerd.*
  ichthyaëtus, *Pall.*
Sylochelidon Caspius, *Lath.*
Hydrochelidon Indicus, *Steph.*
Gelochelidon Anglicus, *Mont.*
Onychoprion anasthætus, *Scop.*
Sterna Javanica, *Horsf.*
  melanogaster, *Temm.*
  minuta, *Linn.*
Seena aurantia, *Gray.*
Thalasseus Bengalensis, *Less.*
  cristata, *Steph.*
Dromas ardeola, *Payk.*
Atagen ariel, *Gould.*
Thalassidroma *melanogaster*, *Gould.*
Plotus melanogaster, *Gm.*
Pelicanus Philippensis, *Gm.*
Graculus Sinensis, *Shaw.*
  pygmæus, *Pallas.*

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NOTE.

The following is a list of the birds which are, as far as is at present known, peculiar to the island; it will probably at some future day be determined that some included in it have a wider geographical range.

Hæmatornis spilogaster. The "Ceylon eagle;" was discovered by Mr. Layard in the Wanny, and by Dr. Kelaart at Trincomalie.

Athene castonotus. The chestnut-winged hawk owl. This pretty little owl was added to the list of Ceylon, birds by Dr. Templeton.

Batrachostomus monoliger. The oil bird; was discovered amongst the precipitous rocks of the Adam's Peak range by Mr. Layard. Another specimen was sent about the same time to Sir James Emerson Tennent from Avisavelle. Mr. Mitford has met with it at Ratnapoora.

Caprimulgus Kelaarti. Kelaart's nightjar; swarms on the marshy plains of Neuera-ellia at dusk.

Hirundo hyperythra. The red-bellied swallow; was discovered in 1849 by Mr. Layard at Ambepusse. They build a globular nest with a round hole at top. A pair built in the ring for a hanging lamp in Dr. Gardner's study at Peradinia, and hatched their young, undisturbed by the daily trimming and lighting of the lamp.

Cisticola omalura. Layard's mountain grass warbler; is found in abundance on Horton Plain and Neuera-ellia, among the long Patena grass.

Drymoica valida. Layard's wren-warbler; frequents tufts of grass and low bushes, feeding on insects.

Pratincola atrata. The Neuera-ellia robin; a melodious songster; added to our catalogue by Dr. Kelaart.

Brachypteryx Palliseri. Ant thrush. A rare bird, added by Dr. Kelaart from Dimboola and Neuera-ellia.

Pellorneum fuscocapillum. Mr. Layard found two specimens of this rare thrush creeping about shrubs and bushes, feeding on insects.

Alcippe nigrifrons. This thrush frequents low impenetrable thickets, and seems to be widely distributed.

Oreocincla spiloptera. The spotted thrush is only found in the mountain zone about lofty trees.

Merula Kinnisii. The Neuera-ellia blackbird; was added by Dr. Kelaart.

Garrulax cinereifrons. The ashy-headed babbler; was found by Mr. Layard near Ratnapoora.

Pomatorhinus melanurus. Mr. Layard states that the mountain babbler frequents low, scraggy, impenetrable brush, along the margins of deserted cheena land.

Malacocercus rufescens. The red-dung thrush, added by Dr. Templeton to the Singhalese Fauna, is found in thick jungle in the southern and midland districts.

Pycnonotus penicillatus. The yellow-eared bulbul; was found by Dr. Kelaart at Neuera-ellia.

Butalis Muttui. This very handsome flycatcher was procured at Point Pedro by Mr. Layard.

Dicrurus edoliformis. Dr. Templeton found this kingcrow at the Bibloo Oya. Mr. Layard has since got it at Ambogammoa.

Dicrurus leucopygialis. The Ceylon kingcrow was sent to Mr. Blyth from the vicinity of Colombo, by Dr. Templeton.

Tephrodornis affinis. The Ceylon butcher-bird. A migratory species found in the wooded grass lands in October.

Cissa puella. Layard's mountain jay. A most lovely bird, found along mountain streams at Neuera-ellia and elsewhere.

Enlabes ptilogenys. Templeton's mynah. The largest and most beautiful of the species. It is found in flocks perching on the highest trees, feeding on berries.

Loriculus asiaticus. The small parroquet, abundant in various districts.

Palæornis Calthropæ. Layard's purple-headed parroquet, found at Kandy, is a very handsome bird, flying in flocks, and resting on the summits of the very highest trees. Dr. Kelaart states that it is the only parroquet of the Neuera-ellia range.

Palæornis Layardi. The Jaffna parroquet was discovered by Mr. Layard at Point Pedro.

Megalaima flavifrons. The yellow-headed barbet, is not uncommon.

Megalaima rubricapilla, is found in most parts of the island.

Picus gymnopthalmus. Layard's woodpecker. The smallest of the species, was discovered near Colombo, amongst jak trees.

Brachypternus Ceylonus. The Ceylon woodpecker, is found in abundance near Neuera-ellia.

Brachypternus rubescens. The red woodpecker.

Centropus chlororhynchus. The yellow-billed cuckoo, was detected by Mr. Layard in dense jungle near Colombo and Avisavelle.

Phœnicophaus pyrrhocephalus. The malkoha, is confined to the southern highlands.

Treron flavogularis. The common green pigeon, is found in abundance at the top of Balacaddua Pass and at Ratnapoora. It feeds on berries and flies in large flocks. It was believed to be identical with the following.—*Mag. Nat. Hist.* p. 58: 1854.

Treron Pompadoura. The Pompadour pigeon. "The Prince of Canino has shown that this is a totally distinct bird, much smaller, with the quantity of maroon colour on the mantle greatly reduced."—Paper by Mr. BLYTH, *Mag. Nat. Hist.* p. 514: 1857.

Carpophaga Torringtoniæ. Lady Torrington's pigeon; a very handsome pigeon discovered in the highlands by Dr. Kelaart. It flies high in long sweeps, and makes its nest on the loftiest trees.

Carpophaga pusilla. The little-hill dove, a migratory species found by Mr. Layard in the mountain zone, only appearing with the ripened fruit of the teak, banyan, &c., on which they feed.

Gallus Lafayetti. The Ceylon jungle fowl. The female of this handsome bird was figured by Mr. GRAY (*Ill. Ind. Zool.*) under the name of G. Stanleyi. The cock bird had long been lost to naturalists, until a specimen was forwarded to Mr. Blyth, who at once recognised it as the long-looked-for male of Mr. Gray's recently described female. It is abundant in all the uncultivated portions of Ceylon; coming out into the open spaces to feed in the mornings and evenings.

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CHAP. III.

REPTILES.

LIZARDS. *Iguana.*— One of the earliest if not the first remarkable animal to startle a stranger on arriving in Ceylon, whilst wending his way from Point-de-Galle to Colombo, is a huge lizard of from four to five feet in length, the Talla-goya of the Singhalese, and Iguana[1] of the Europeans. It may be seen at noonday searching for ants and insects in the middle of the highway and along the fences; when disturbed, but by no means alarmed, by the approach of man, it moves off to a safe distance; and, the intrusion being over, returns again to the occupation in which it had been interrupted. Repulsive as it is in appearance, it is perfectly harmless, and is hunted down by dogs in the maritime provinces, where its delicate flesh is converted into curry, and its skin into shoes. When seized, it has the power of inflicting a smart blow with its tail. The Talla-goya lives in almost any convenient hollow, such as a hole in the ground, or the deserted nest of the termites; and some small ones which frequented my garden at Colombo, made their retreat in the heart of a decayed tree. A still larger species, the Kabragoya[2], which is partial to marshy ground, when disturbed upon land, will take refuge in the nearest water. From the somewhat eruptive appearance of the yellow blotches on its scales, a closely allied species, similarly

[1] Monitor dracœna, *Linn.* Among the barbarous nostrums of the uneducated natives, both Singhalese and Tamil, is the tongue of the iguana, which they regard as a specific for consumption, if plucked from the living animal and swallowed whole

[2] Hydrosaurus salvator, *Wagler*.

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spotted, formerly obtained amongst naturalists the name of *Monitor exanthemata*, and it is curious that the native appellation of this one, Kabra[1], is suggestive of the same idea. The Singhalese, on a strictly homœopathic principle, believe that its fat, externally applied, is a cure for cutaneous disorders, but that inwardly taken it is poisonous.[2] It is one of the incidents which seem to indicate that Ceylon belongs to a separate circle of physical geography, this lizard has not hitherto been discovered on the continent of Hindustan, though it is found to the eastward in Burmah.[3]

Blood-suckers.—These, however, are but the stranger's introduction to innumerable varieties of lizards, all most attractive in their sudden movements, and some unsurpassed in the brilliancy of their colouring, which bask on banks, dart over rocks, and peer curiously out of the

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[1] In the *Mahawanso* the hero, Tisso, is said to have been "afflicted with a cutaneous complaint which made his skin scaly like that of the *godho*." —Ch. xxiv. p. 148. "Godho" is the Pali name for the Kabra-goya.

[2] In the preparation of the mysterious poison, the *Cobra-tel*, which is regarded with so much horror by the Singhalese, the unfortunate Kabra-goya is forced to take a painfully prominent part. The receipt, as written down by a Kandyan, was sent to me from Kornegalle by Mr. Morris, in 1840; and in dramatic arrangement it far outdoes the cauldron of *Macbeth's* witches. The ingredients are extracted from venomous snakes, the Cobra de Capello (from which it takes its name), the Carawella, and the Tic prolonga, by making an incision in the head and suspending the reptiles over a chattie to collect the poison. To this, arsenic and other drugs are added, and the whole is to be "boiled in a human skull, with the aid of the three Kabra-goyas, which are tied on three sides of the fire, with their heads directed towards it, and tormented by whips to make them hiss, so that the fire may blaze. The froth from their lips is then to be added to the boiling mixture, and so soon as an oily scum rises to the surface, the *cobra-tel* is complete."

Although it is obvious that the arsenic is the main ingredient in the poison, Mr. Morris reported to me that this mode of preparing it was actually practised in his district; and the above account was transmitted by him apropos to the murder of a Mohatal and his wife, which was then under investigation, and which had been committed with the *cobra-tel*. Before commencing the operation of preparing the poison, a cock is first sacrificed to the yakkos or demons.

[3] In corroboration of the view propounded elsewhere (see pp. 7, 84, &c.), and opposed to the popular belief that Ceylon, at some remote period, was detached from the continent of India by the interposition of the sea, a list of reptiles will be found at p. 203, including, not only individual species, but whole genera peculiar to the island, and not to be found on the mainland. See a paper by DR. A GÜNTHER on *The Geog. Distribution of Reptiles*, Magaz. Nat. Hist. for March, 1859, p. 230.

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decaying chinks of every ruined wall. In all their motion there is that vivid and brief energy, the rapid but unrestrained action which is associated with their limited power of respiration, and which justifies the accurate picture of—

> "The green lizard, rustling thro' the grass,
> And up the fluted shaft, *with short, quick, spring*,
> To vanish in the chinks which time has made."[1]

One of the most beautiful of this race is the *green calotes*[2], in length about twelve inches, which, with the exception of a few dark streaks about the head, is as brilliant as the purest emerald or malachite. Unlike its congeners of the same family, it never alters this dazzling hue, whilst many of them possess the power, like the chameleon, but in a less degree, of exchanging their ordinary colours for others less conspicuous. The *C. ophiomachus*, and another, the *C. versicolor*, exhibit this faculty in a remarkable manner. The head and neck, when the animal is irritated or hastily swallowing its food, becomes of a brilliant red, (whence the latter has acquired the name of the "blood-sucker,") whilst the usual tint of the rest of the body is converted into pale yellow. The *sitana*[3], and a number of others, exhibit similar phenomena.

Chameleon.—The true chameleon[4] is found, but not in great numbers, in the dry districts in the north of Ceylon, where it frequents the trees, in slow pursuit of its insect prey. Whilst the faculty of this creature to blush all the colours of the rainbow has attracted the wonder of all ages, sufficient attention has hardly been given to the imperfect sympathy which subsists between the two lobes of the brain, and the two sets of nerves which permeate the opposite sides of its frame. Hence, not only have each of the eyes an action quite independent of the other, but one side of its body would appear

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[1] Rogers' *Pæstum*.
[2] Calotes viridis, *Gray*.
[3] Sitana Ponticereana, *Cuv.*
[4] Chamælio vulgaris, *Daud.*

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to be sometimes asleep whilst the other is vigilant and active: one will assume a green tinge whilst the opposite one is red; and it is said that the chameleon is utterly unable to swim, from the incapacity of the muscles of the two sides to act in concert.

Ceratophora.—A unique lizard, and hitherto known only by two specimens, one in the British Museum, and another in that of Leyden, is the *Ceratophora Stoddartii*, distinguished by the peculiarity of its having no external ear, whilst its muzzle bears on its extremity the horn-like process from which it takes its name. It has recently been discovered by Dr. Kelaart to be a native of the higher Kandyan hills, where it is sometimes seen in the older trees in pursuit of sect larvæ.[1]

Geckoes.—But the most familiar and attractive of the class are the *Geckoes*[2], which frequent the sitting-rooms, and being furnished with pads to each toe, are enabled to ascend perpendicular walls and adhere to glass and ceilings. Being nocturnal in their habits, the pupil of the eye, instead of being circular as in the diurnal species, is linear and vertical like those of the cat. As soon as evening arrives, they emerge from the chinks and recesses where they conceal themselves during the day, in search of insects which retire to settle for the night, and are to be seen in every house in keen and crafty pursuits of their prey. In a boudoir where the ladies of my family spent their evenings, one of these familiar and amusing little creatures had its hiding-place behind a gilt picture frame, and punctually as the candles were lighted, it made its appearance on the wall to be fed with its accustomed crumb; and, if neglected, it reiterated its sharp quick call of *chic*, *chic*, *chit*, till attended to. It was of a delicate grey colour, tinged with pink; and having by accident fallen on a work-table, it fled, leaving its tail behind it, which, however, it repro-

[1] Dr. Kelaart has likewise discovered at Neuera-ellia a *Salea*, distinct from the S. Jerdoni.

[2] Hemidactylus maculatus, *Dum.* et *Bib.*, *Gray*; H. Leschenaultii, *Dum* et *Bib.*; H. frenatus, *Schlegel.*

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duced within less than a month. This faculty of reproduction is doubtless designed to enable the creature to escape from its assailants: the detaching of the limb is evidently its own act; and it is observable, that when reproduced, the tail generally exhibits some variation from its various form, the diverging spines being absent, the new portion covered with small square uniform scales placed in a cross series, and the scuta below being seldom so distinct as in the original member.[1] In an officer's quarters in the fort of Colombo, a Geckoe had been taught to come daily to the dinner-table, and always made its appearance along with the dessert. The family were absent for some months, during which the house underwent extensive repairs, the roof having been raised, the walls stuccoed, and ceilings whitened. It was naturally surmised that so long a suspension of its accustomed habits would have led to the disappearance of the little lizard; but on the return of its old friends, at their first dinner it made its entrance as usual the instant the cloth had been removed.

Crocodile. — The Portuguese in India, like the Spaniards in South America, affixed the name of *lagarto* to the huge reptiles which infest the rivers and estuaries of both continents; and to the present day the Europeans in Ceylon apply the term *alligator* to what are in reality *crocodiles*, which literally swarm in the still waters and tanks throughout the northern provinces, but rarely frequent rapid stream, and have never been found in the marshy elevations among the hills. Their instincts in Ceylon present no variation from their habits in other countries. There would appear to be two well-distinguished species in the island, the *Allie Kimboola*[2], the Indian crocodile, which inhabits the rivers and estuaries throughout the low countries of the coasts, attaining the length of sixteen or eighteen

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[1] *Brit. Mus. Cat.* p. 143; KELAART's *Prod. Faun. Zeylan.*, p. 183.

[2] Crocodilus biporcatus, *Cuvier.*

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feet, and which will assail man when pressed by hunger; and the Marsh crocodile[1], which lives exclusively in fresh water, frequenting the tanks in the northern and central provinces, and confining its attacks to the smaller animals: in length it seldom exceeds twelve or thirteen feet. Sportsmen complain that their dogs are constantly seized by both species; and water-fowl, when shot, frequently disappear before they can be secured by the fowler.[2] The Singhalese believe that the crocodile can only move swiftly on sand or smooth clay, its feet being too tender to tread firmly on hard or stony ground. In the dry season, when the watercourses begin to fail and the tanks become exhausted, the Marsh crocodiles are sometimes encountered wandering in search of water in the jungle; but generally, during the extreme drought, when unable to procure their ordinary food from the drying up of the watercourses, they bury themselves in the mud, and remain in a state of torpor till released by the recurrence of the rains.[3] At Arne-tivoe, in the eastern province, whilst riding across the parched bed of the tank, I was shown the recess, still bearing the form and impress of the crocodile, out of which the animal had been seen to emerge the day before. A story was also related to me of an officer attached to the department of the Surveyor-General, who, having pitched his tent in a similar position, had been disturbed during the night by feeling a movement of the earth below his bed, from which on the following day a crocodile emerged making its appearance from beneath the matting.[4]

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[1] Crocodilus palustris, *Less.*

[2] In Siam the flesh of the crocodile is sold for food in the markets and bazaars. "Un jour je vis plus de cinquante crocodiles, petits et grands, attachés aux colonnes de leurs maisons. Ils les vendent la chair comme on vendrait de la chair de porc, mais à bien meilleur marché."—PALLEGOIX, *Siam*, vol. i. p. 174.

[3] HERODOTUS records the observations of the Egyptians that the crocodile of the Nile abstains from food during the four winter months. —*Euterpe*, lviii.

[4] HUMBOLDT relates a similar story as occurring at Calabazo, in Venezuela.—*Personal Narrative*, c. xvi.

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The species which inhabits the fresh water is essentially cowardly in its instincts, and hastens to conceal itself on the appearance of man. A gentleman (who told me the circumstance), when riding in the jungle, overtook a crocodile, evidently roaming in search of water. It fled to a shallow pool almost dried by the sun, and, thrusting its head into the mud till it covered up its eyes, it remained unmoved in profound confidence of perfect concealment. In 1833, during the progress of the Pearl Fishery, Sir Robert Wilmot Horton employed men to drag for crocodiles in a pond which was infested with them in the immediate vicinity of Aripo. The pool was about fifty yards in length, by ten or twelve wide, shallowing gradually to the edge, and not exceeding four or five feet in the deepest part. As the party approached the bund, from twenty to thirty reptiles, which had been basking in the sun, rose and fled to the water. A net, specially weighted so as to sink its lower edge to the bottom, was then stretched from bank to bank and swept to the further end of the pond, followed by a line of men with poles to drive the crocodiles forward: so complete was the arrangement, that no individual could evade the net, yet, to the astonishment of the Governor's party, not one was to be found when it was drawn on shore, and no means of escape was apparent or possible except descending into the mud at the bottom of the pond.[1]

Testudinata. *Tortoise.* — Of the *testudinata* the land tortoises are numerous, but present no remarkable features beyond the beautiful marking of the starred variety[2], which is common in the north-western province

[1] A remarkable instance of the vitality of the common crocodile, *C. biporcatus*, was related to me by a gentleman at Galle: he had caught an unusually large one on a baited hook, which his coolies disembowelled, the aperture in the stomach being left expanded by a stick placed across it. On returning in the afternoon with a view to secure the head, they found that the creature had crawled for some distance and made its escape into the water.

[2] Testudo stellata, *Schweig.*

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around Putlam and Chilaw, and is distinguished by the bright yellow rays which diversify the deep black of its dorsal shield. From one of these which was kept in my garden I took a number of flat ticks (*Ixodes*), which adhered to its fleshy neck in such a position as to baffle any attempt of the animal itself to remove them; but as they were exposed to constant danger of being crushed against the plastron during the protrusion and retraction of the head, each was covered with a horny case almost as resistant as the carapace of the tortoise itself. Such an adaptation of structure is scarcely less striking than that of the parasites found on the spotted lizard of Berar by Dr. Hooker, each of which presented the distinct colour of the scale to which it adhered.[1]

The marshes and pools of the interior are frequented by the terrapins[2], which the natives are in the habit of keeping alive in wells under the conviction that they clear them of impurities. The edible turtle[3] is found on all the coasts of the island, and sells for a few shillings or a few pence, according to its size and abundance at the moment. At certain seasons the turtle on the south-western coast of Ceylon are avoided as poisonous, and some lamentable instances are recorded of death which was ascribed to their use. At Pantura, to the south of Colombo, twenty-eight persons who had partaken of turtle in October, 1840, were seized with sickness immediately, after which coma succeeded, and eighteen died during the night. Those who survived said there was nothing unusual in the appearance of the flesh except that it was fatter than ordinary. Other similarly fatal occurrences have been attributed to turtle curry; but as they have never been proved to proceed

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[1] Hooker's *Himalayan Journals*, vol. i. p. 37.

[2] *Emyda Ceylonensis*, Gray, *Catalogue*, p. 64, tab. 29 *a*; *Mag. Nat. Hist.* p. 265: 1856. Dr. Kelaart, in his *Prodromus* (p. 179), refers this to the common Indian species, *E. punctata*; but Dr. Gray has shown it to be a distinct one. It is generally distributed in the lower parts of Ceylon, in lakes and tanks. It is put into wells to act the part of a scavenger. By the Singhalese it is named *Kiri-ibba*.

[3] Chelonia virgata, *Schweig.*

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exclusively from that source, there is room for believing that the poison may have been contained in some other ingredient. In the Gulf of Manaar turtle is frequently found of such a size as to measure between four and five feet in length; and on one occasion, in riding along the sea-shore north of Putlam, I saw a man in charge of some sheep, resting under the shade of a turtle shell, which he had erected on sticks to protect him from the sun — almost verifying the statement of Ælian, that in the seas off Ceylon there are tortoises so large that several persons may find ample shelter beneath a single shell.[1]

The hawksbill turtle[2], which supplies the tortoise-shell of commerce, was at former times taken in great numbers in the vicinity of Hambangtotte during the season when they came to deposit their eggs, and there is still a considerable trade in this article, which is manufactured into ornaments, boxes, and combs by the Moormen resident at Galle. If taken from the animal after death and decomposition, the colour of the shell becomes clouded and milky, and hence the cruel expedient is resorted to of seizing the turtles as they repair to the shore to deposit their eggs, and suspending them over fires till heat makes the plates on the dorsal shields start from the bone of the carapace, after which the creature is permitted to escape to the water.[3] In illustration of the resistless influence of instinct at the

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[1] "*Τίκτονται δὲ ἄρα ἐν ταύτῃ τῇ θαλάττῃ, καὶ χελῶναι μέγισται, ὧνπερ σὺν τὰ ἔλυτρα ὄροφοι γίνονται· καὶ γάρ εστι καὶ πεντεκαίδεκα πηχῶν ἓν χελώνειον, ὡς ὑποικεῖν οὐκ ὀλίγους, καὶ τοὺς ἡλίους πυρωδεστάτους ἀποστέγει, καὶ σκιὰν ἀσμένοις παρέχει.*" — Lib. xvi. c. 17. Ælian copied this statement literatim from MEGASTHENES, *Indica Frag.* lix. 31; and may not Megasthenes have referred to some tradition connected with the gigantic fossilised species discovered on the Sewalik Hills, the remains of which are now in the Museum at the East India House?

[2] Chelonia imbricata, *Linn.*

[3] At Celebes, whence the finest tortoise-shell is exported to China, the natives kill the turtle by blows on the head, and immerse the shell in boiling water to detach the plates. Dry heat is only resorted to by the unskilful, who frequently destroy the tortoise-shell in the operation. — *Journ. Indian Archipel.* vol. iii. p. 227, 1849.

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period of breeding, it may be mentioned that the same tortoise is believed to return again and again to the same spot, notwithstanding that at each visit she had to undergo a repetition of this torture. In the year 1826, a hawksbill turtle was taken near Hambangtotte, which bore a ring attached to one of its fins that had been placed there by a Dutch officer thirty years before, with a view to establish the fact of these recurring visits to the same beach.[1]

Snakes.—It is perhaps owing to the aversion excited by the ferocious expression and unusual action of serpents, combined with an instinctive dread of attack, that exaggerated ideas prevail both as to their numbers in Ceylon, and the danger to be apprehended from encountering them. The Singhalese profess to distinguish a great many kinds, of which not more than one half have as yet been scientifically identified; but so cautiously do serpents make their appearance, that the surprise of long residents is invariably expressed at the rarity with which they are to be seen; and from my own journeys, through the jungle, often of two to five hundred miles, I have frequently returned without seeing a single snake.[2] Davy, whose attention was carefully directed to the poisonous serpents of Ceylon[3], came to the conclusion that but *four*, out of twenty species examined by him, were venomous, and that of these only two (the *tic-polonga*[4] and *cobra de capello*[5]) were capable of inflicting a wound likely to be fatal to man. The third is the *carawilla*[6], a brown snake of about twelve inches in length; and for the fourth, of which only a few specimens have been procured, the Singhalese have no name in their

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[1] BENNETT'S *Ceylon*, ch. xxxiv.

[2] Mr. Bennett, who resided much in the south-east of the island, ascribes the rarity of serpents in the jungle to the abundance of the wild peafowl, whose partiality to snakes renders them the chief destroyers of these reptiles.

[3] See DAVY'S *Ceylon*, ch. xiv.

[4] Daboia elegans, *Gray*.

[5] Naja tripudians, *Günther*.

[6] Trigonocephalus hypnale, *Wagl.*

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vernacular,—a proof that it is neither deadly nor abundant.

Cobra de Capello.—The cobra de capello is the only one exhibited by the itinerant snake-charmers; and the accuracy of Davy's conjecture, that they control it, not by extracting its fangs, but by courageously availing themselves of its accustomed timidity and extreme reluctance to use its fatal weapons, received a painful confirmation during my residence in Ceylon, by the death of one of these performers, whom his audience had provoked to attempt some unaccustomed familiarity with the cobra; it bit him on the wrist, and he expired the same evening. The hill near Kandy, on which the official residences of the Governor and Colonial Secretary had been built, is covered in many places with the deserted nests of the white ants (*termites*), and these are the favourite retreats of the sluggish and spiritless cobra, which watches from their apertures the toads and lizards on which it preys. Here, when I have repeatedly come upon them, their only impulse was concealment; and on one occasion, when a cobra of considerable length could not escape sufficiently quickly, owing to the bank being nearly precipitous on both sides of the road, a few blows from my whip were sufficient to deprive it of life. There is a rare variety which the natives fancifully designate the "king of the cobras;" it has the head and the anterior half of the body of so light a colour, that at a distance it seems like a silvery white.[1] A gentleman who held a civil appointment at Kornegalle, had a servant who was bitten by a snake, and he informed me that on enlarging a hole near the foot of the tree under which the accident occurred, he unearthed a cobra of upwards of

[1] A Singhalese work, the *Sarpa Doata*, quoted in the *Ceylon Times*, January, 1857, enumerates four species of the cobra;—the *raja*, or king; the *velyander*, or trader; the *baboona*, or hermit; and the *goore*, or agriculturist. The young cobras, it says, are not venomous till after the thirteenth day, when they shed their coat for the first time.

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three feet long, and so purely white as to induce him to believe that it was an albino. With the exception of the rat snake[1], the cobra de capello is the only serpent which seems from choice to frequent the vicinity of human dwellings, but it is doubtless attracted by the young of the domestic fowl and by the moisture of the wells and drainage. The Singhalese remark that if one cobra be destroyed near a house, its companion is almost certain to be discovered immediately after,—a popular belief which I had an opportunity of verifying on more than one occasion. Once, when a snake of this description was killed in a bath of Government House at Colombo, its mate was found in the same spot the day after; and again, at my own stables, a cobra of five feet long, having fallen into the well, which was too deep to permit its escape, its companion of the same size was found the same morning in an adjoining drain.[2] On this occasion the snake, which had been several hours in the well, swam with ease, raising its head and hood above water; and instances have repeatedly occurred of the cobra de capello voluntarily taking considerable excursions by sea. When the "Wellington," a govern-

[1] Coryphodon Blumenbachii. WOLF, in his interesting story of his *Life and Adventures in Ceylon*, mentions that rat-snakes were often so domesticated by the natives as to feed at their table. He says: "I once saw an example of this in the house of a native. It being meal time, he called his snake, which immediately came forth from the roof under which he and I were sitting. He gave it victuals from his own dish, which the snake took of itself from off a fig-leaf that was laid for it, and ate along with its host. When it had eaten its fill, he gave it a kiss and bade it go to its hole."

Since the above was written, Major Skinner, writing to me 12th Dec. 1858, mentions the still more remarkable case of the domestication of the cobra de capello in Ceylon. "Did you ever hear," he says, "of tame cobras being kept and domesticated about a house, going in and out at pleasure, and in common with the rest of the inmates? In one family, near Negombo, cobras are kept as protectors, in the place of dogs, by a wealthy man who has always large sums of money in his house. But this is not a solitary case of the kind. I heard of it only the other day, but from undoubtedly good authority. The snakes glide about the house, a terror to thieves, but never attempting to harm the inmates."

[2] PLINY notices the affection that subsists between the male and female asp; and that if one of them happens to be killed, the other seeks to avenge its death.—Lib. viii. c. 37.

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ment vessel employed in the conservancy of the pearl banks, was anchored about a quarter of a mile from land, in the bay of Koodremalé, a cobra was seen, about an hour before sunset, swimming vigorously towards the ship. It came within twelve yards, when the sailors assailed it with billets of wood and other missiles, and forced it to return to land. The following morning they discovered the track which it had left on the shore, and traced it along the sand till it disappeared in the jungle.[1] On a later occasion, in the vicinity of the same spot, when the "Wellington" was lying at some distance from the shore, a cobra was found and killed on board, where it could only have gained access by climbing up the cable. It was first discovered by a sailor, who felt the cold chill as it glided over his foot.[2]

In Bennett's account of "*Ceylon and its Capabilities*," there is a curious piece of Singhalese folk-lore, to the effect, that the cobra de capello every time it expends its poison *loses a joint of its tail*, and eventually acquires a head which resembles that of a toad. A recent discovery of Dr. Kelaart has thrown light on the origin of this popular fallacy. The family of "false snakes" (*pseudo-typhlops*), as Schlegel names the group, have till lately consisted of but three species, one only of which was known to inhabit Ceylon. They belong to a family intermediate between the lizards and serpents, with the body of the latter, and the head of the former, with which they are moreover identified by having the

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[1] Stewart's *Account of the Pearl Fisheries of Ceylon*, p. 9: Colombo, 1843.

The Python reticulatus (the "rock-snake") has been known, like the cobra de capello, to make short voyages at sea. One was taken on board H.M.S. "Hastings," when off the coast of Burmah, in 1853; it is now in the possession of the surgeon, Dr. Scott.

[2] Swainson, in his *Habits and Instincts of Animals*, c. iv. p. 187, says that instances are well attested of the common English snake having been met with in the open channel, between the coast of Wales and the island of Anglesea, as if they had taken their departure from the one and were bound for the other.

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upper jaw fixed to the skull as in mammals and birds, instead of movable as amongst the true ophidians. In this they resemble the amphisbænidæ; but the tribe of *Uropeltidæ*, or "rough tails," has the further peculiarity, that the tail is truncated, instead of ending, like that of the typhlops, in a point more or less acute; and the reptile assists its own movements by pressing the flat end to the ground. Within a very recent period an important addition has been made to this genus, by the discovery of five new species in Ceylon; in some of which the singular construction of the tail is developed to an extent infinitely more marked than in any previously existing specimen. One of these, the *Uropeltis grandis* of Kelaart, is distinguished by its dark brown colour shot with a bluish metallic lustre, closely approaching the ordinary shade of the cobra; and the tail is abruptly and flatly compressed as though it had been severed by a knife. The form of this singular reptile will be best understood by a reference to the accompanying figure; and there can be, I think, little doubt that to its strange and anomalous structure is to be traced the fable of the transformation of the cobra de capello. The colour alone would seem to identify

UROPELTIS GRANDIS.

the two reptiles, but the head and mouth are no longer those of a serpent, and the disappearance of the tail might readily suggest the mutilation which the tradition asserts.

The Singhalese Buddhists, in their religious abstinence from inflicting death on any creature, are accustomed, after securing a venomous snake, to enclose it in a basket of woven palm leaves, and to set it afloat on a

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river. During my residence in Ceylon, I never heard of the death of a European which was caused by the bite of a snake; and in the returns of coroners' inquests which were made officially to my department, such accidents to the natives appear chiefly to have happened at night, when the animal having been surprised or trodden on, had inflicted the wound in self-defence.[1] For these reasons the Singhalese, when obliged to leave their houses in the dark, carry a stick with a loose ring, the noise[2] of which as they strike it on the ground is sufficient to warn the snakes to leave their path.

The Python. — The great python[3] (the "boa," as it is commonly designated by Europeans, the "anaconda" of Eastern story), which is supposed to crush the bones of an elephant, and to swallow the tiger, is found, though not of so portentous dimensions, in the cinnamon gardens within a mile of the fort of Colombo, where it feeds on hog-deer and other smaller animals which frequent them.

The natives occasionally take it alive, and securing it to a pole expose it for sale as a curiosity. One which was brought to me in this way measured seventeen feet with a proportionate thickness: but another which crossed my path on a coffee estate on the Peacock Mountain at Pusilawa, considerably exceeded these dimensions. Another which I watched in the garden at Elie House, near Colombo, surprised me by the ease with which it erected itself almost perpendicularly in order to scale a wall upwards of ten feet high.

Of ten species which ascend the trees to search for

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[1] In a return of 112 coroners' inquests, in cases of death from wild animals, held in Ceylon in five years, from 1851 to 1855 inclusive, 68 are ascribed to the bites of serpents; and in almost every instance the assault is set down as having taken place *at night*. The majority of the sufferers were children and women.

[2] PLINY notices that the serpent has the sense of hearing more acute than that of sight; and that it is more frequently put in motion by the sound of footsteps than by the appearance of the intruder, "excitatur pede sæpius."—Lib. viii. c. 36.

[3] Python reticulatus, *Gray*.

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squirrels and lizards, and to rifle the nests of birds, one half, including the green *carawilla*, and the deadly *tic polonga*, are believed by the natives to be venomous; but the fact is very dubious. I have heard of the cobra being found on the crown of a coco-nut palm, attracted, it was said, by the toddy which was flowing at the time, as it was the season for drawing it.

Water Snakes.—The fresh-water snakes, of which four species have been described inhabiting the still water and pools, are all harmless in Ceylon. A gentleman, who found near a river an agglutinated cluster of the eggs of one variety (*Tropidonotus umbratus*), placed them under a glass shade on his drawing-room table, where one by one the young serpents emerged from the shell to the number of twenty.

The use of the Pamboo-Kaloo, or snake-stone, as a remedy in cases of wounds by venomous serpents, has probably been communicated to the Singhalese by the itinerant snake-charmers who resort to the island from the coast of Coromandel; and more than one well-authenticated instance of its successful application has been told to me by persons who had been eye-witnesses to what they described. On one occasion, in March, 1854, a friend of mine was riding, with some other civil officers of the government, along a jungle path in the vicinity of Bintenne, when they saw one of two Tamils, who were approaching them, suddenly dart into the forest and return, holding in both hands a cobra de capello which he had seized by the head and tail. He called to his companion for assistance to place it in their covered basket, but, in doing this, he handled it so inexpertly that it seized him by the finger, and retained its hold for a few seconds, as if unable to retract its fangs. The blood flowed, and intense pain appeared to follow almost immediately; but, with all expedition, the friend of the sufferer undid his waistcloth, and took from it two snake-stones, each of the size of a small almond, intensely black and highly

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polished, though of an extremely light substance. These he applied one to each wound inflicted by the teeth of the serpent, to which the stones attached themselves closely, the blood that oozed from the bites being rapidly imbibed by the porous texture of the article applied. The stones adhered tenaciously for three or four minutes, the wounded man's companion in the meanwhile rubbing his arm downwards from the shoulder towards the fingers. At length the snake-stones dropped off of their own accord; the suffering appeared to have subsided; he twisted his fingers till the joints cracked, and went on his way without concern. Whilst this had been going on, another Indian of the party who had come up took from his bag a small piece of white wood, which resembled a root, and passed it gently near the head of the cobra, which the latter immediately inclined close to the ground; he then lifted the snake without hesitation, and coiled it into a circle at the bottom of his basket. The root by which he professed to be enabled to perform this operation with safety he called the *Naya-thalee Kalinga* (the root of the snake-plant), protected by which he professed his ability to approach any reptile with impunity.

In another instance, in 1853, Mr. Lavalliere, the District Judge of Kandy, informed me that he saw a snake-charmer in the jungle, close by the town, search for a *cobra de capello*, and, after disturbing it in its retreat, the man tried to secure it, but, in the attempt, he was bitten in the thigh till blood trickled from the wound. He instantly applied the *Pamboo-Kaloo*, which adhered closely for about ten minutes, during which time he passed the root which he held in his hand backwards and forwards above the stone, till the latter dropped to the ground. He assured Mr. Lavalliere that all danger was then past. That gentleman obtained from him the snake-stone he had relied on, and saw him repeatedly afterwards in perfect health.

The substances which were used on both these occa-

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sions are now in my possession. The roots employed by the several parties are not identical. One appears to be a bit of the stem of an Aristolochia; the other is so dried as to render it difficult to identify it, but it resembles the quadrangular stem of a jungle vine. Some species of Aristolochia, such as the *A. serpentaria* of North America, are supposed to act as a specific in the cure of snake-bites; and the *A. indica* is the plant to which the ichneumon is popularly believed to resort as an antidote when bitten[1]; but it is probable that the use of any particular plant by the snake-charmers is a pretence, or rather a delusion, the reptile being overpowered by the resolute action of the operator, and not by the influence of any secondary appliance, the confidence inspired by the supposed talisman enabling its possessor to address himself fearlessly to his task, and thus to effect, by determination and will, what is popularly believed to be the result of charms and stupefaction. Still it is curious that, amongst the natives of Northern Africa, who lay hold of the *Cerastes* without fear or hesitation, their impunity is ascribed to the use of a plant with which they anoint themselves before touching the reptile[2]; and Bruce says of the people of Sennar that they acquire exemption from the fatal consequences of the bite by chewing a particular root and washing themselves with an infusion of certain plants. He adds that a portion of this root was given him, with a view to test its efficacy in his own person, but that he had not sufficient resolution to undergo the experiment.

As to the snake-stone itself, I submitted one, the application of which I have been describing, to Mr. Faraday, and he has communicated to me, as the result of his analysis, his belief that it is "a piece of charred bone which has been filled with blood perhaps several

[1] For an account of the encounter between the ichneumon and the venomous snakes of Ceylon, see P. II. ch. i. p. 149.

[2] Hasselquist.

times, and then carefully charred again. Evidence of this is afforded, as well by the apertures of cells or tubes on its surface as by the fact that it yields and breaks under pressure, and exhibits an organic structure within. When heated slightly, water rises from it, and also a little ammonia; and, if heated still more highly in the air, carbon burns away, and a bulky white ash is left, retaining the shape and size of the stone." This ash, as is evident from inspection, cannot have belonged to any vegetable substance, for it is almost entirely composed of phosphate of lime. Mr. Faraday adds that "if the piece of matter has ever been employed as a spongy absorbent, it seems hardly fit for that purpose in its present state; but who can say to what treatment it has been subjected since it was fit for use, or to what treatment the natives may submit it when expecting to have occasion to use it?"

The probability is, that the animal charcoal, when instantaneously applied, may be sufficiently porous and absorbent to extract the venom from the recent wound, together with a portion of the blood, before it has had time to be carried into the system; and that the blood which Mr. Faraday detected in the specimen submitted to him was that of the Indian on whose person the effect was exhibited on the occasion to which my informant was an eye-witness. The snake-charmers from the coast who visit Ceylon profess to prepare the snake-stones for themselves, and preserve the composition as a secret. Dr. Davy[1], on the authority of Sir Alexander Johnston, says the manufacture of them is a lucrative trade, carried on by the monks of Manilla, who supply the merchants of India—and his analysis confirms that of Mr. Faraday. Of the three different kinds which he examined—one being of partially burnt bone, and another of chalk, the third, consisting chiefly of vegetable matter, resembled a bezoar,—all of them (except

[1] *Account of the Interior of Ceylon*, ch. iii. p. 101.

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the first, which possessed a slight absorbent power) were quite inert, and incapable of having any effect exclusive of that on the imagination of the patient. Thunberg was shown the snake-stone used by the boers at the Cape in 1772, which was imported for them "from the Indies, especially from Malabar," at so high a price that few of the farmers could afford to possess themselves of it; he describes it as convex on one side, black, and so porous that "when thrown into water, it caused bubbles to rise;" and hence, by its absorption, it served, if speedily applied, to extract the poison from the wound.[1]

Cæcilia.—The rocky jungle, bordering the higher coffee estates, provides a safe retreat for a very singular animal, first introduced to the notice of European naturalists about a century ago by Linnæus, who gave it the name *Cæcilia glutinosa*, to indicate two peculiarities manifest to the ordinary observer—an apparent defect of vision, from the eyes being so small and imbedded as to be scarcely distinguishable; and a power of secreting from minute pores in the skin a viscous fluid, resembling that of snails, eels, and some salamanders. Specimens are rare in Europe from the readiness with which it decomposes, breaking down into a flaky mass in the spirits in which it is attempted to be preserved.

The creature is about the length and thickness of an ordinary round desk ruler, a little flattened before and rounded behind. It is brownish, with a pale stripe along either side. The skin is furrowed into 350 circular folds, in which are imbedded minute scales. The head is tolerably distinct, with a double row of fine curved teeth for seizing the insects and worms on which it is supposed to live.

Naturalists are most desirous that the habits and metamorphoses of this creature should be carefully

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[1] *Thunberg*, vol. i. p. 155.

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ascertained, for great doubts have been entertained as to the position it is entitled to occupy in the chain of creation.

Frogs.—In the numerous marshes formed by the overflowing of the rivers in the vast plains of the low country, there are many varieties of frogs, which, both by their colours and by their extraordinary size, are calculated to excite the surprise of strangers.[1] In the lakes around Colombo and the still water near Trincomalie, there are huge creatures of this family, from six to eight inches in length[2], of an olive hue, deepening into brown on the back and yellow on the under side. The Kandian species, recently described, is much less in dimensions, but distinguished by its brilliant colouring, a beautiful grass green above and deep orange underneath.[3]

In the shrubberies around my house at Colombo the graceful little hylas[4] were to be found in great numbers, crouching under broad leaves to protect them from the scorching sun; some of them utter a sharp metallic sound at night, similar to that produced by smacking the lips. They possess in a high degree the power of changing their colour; and one which had seated itself on the gilt pillar of a dinner lamp was scarcely to be distinguished from the or-molu to which it clung. They are enabled to ascend glass by means of the suckers at the extremity of their toes. Their food consists of flies and minute coleoptera.

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[1] The Indian toad (Bufo melanostictus, *Schneid*) is found in Ceylon, and the belief in its venomous nature is as old as the third century B.C., when the *Mahawanso* mentions that the wife of "King Asoca attempted to destroy the great bo-tree (at Magadha) *with the poisoned fang of a toad.*"—Ch. xx. p. 122.

[2] Rana cutipora, and the Malabar bull-frog, R. Malabarica.

[3] R. Kandiana, *Kelaart.*

[4] The tree-frog, Hyla leucomystax, *Graver.*

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List of Ceylon Reptiles.

I am indebted to Dr. Gray of the British Museum for a more complete enumeration of the reptiles of Ceylon than is to be found in Dr. Kelaart's published lists; but many of those new to Europeans have been carefully described by the latter gentleman in his *Prodromus Faunæ Zeylanicæ* and its appendices, as well as in the 13th vol. *Magaz. Nat. Hist.* (1854).

Saura.

Monitor dracæna, *Linn.*
Hydrosaurus salvator, Wagl.
Mabouya elegans, Gray.
Riopa punctata, Linn.
Hardwickii, Gray.
Tiliqua rufescens, Shaw.
Eumeces Taprobanius, *Kel.*
Nessia Burtoni, *Gray.*
Acontias Layardi, *Kelaart.*
Argyrophis bramicus, *Daud.*
Rhinophis Blythii, *Kelaart.*
Mytilia Gerrardii, *Gray.*
Templetonii, *Gray.*
unimaculata, *Gray.*
melanogaster, *Gray.*
Siluboura Ceylonica, *Cuv.*
Uropeltis Saffragamus, *Kelaart.*
grandis, *Kelaart.*
pardalis, *Kelaart.*
Dapatnaya Lankadivana, *Kel.*
Trevelyanii, *Kelaart.*
Hemidactylus frenatus, *Schleg.*
Leschenaultii, *Dum. & Bib.*
trihedrus, Less.
maculatus, *Dum. & Bib.*
Piresii, *Kelaart.*
Coctœi, *Dum. & Bib.*
Peripia Peronii, *Dum. & Bib.*
Gymnodactylus Kandianus, *Kel.*
Sitana Ponticereana, *Cuv.*
Lyriocephalus scutatus, *Wagl.*
Ceratophora Stoddartii, *Gray.*
Salea Jerdoni, *Gray.*
Calotes ophiomachus, *Gray.*
versicolor, *Dum. & Bib.*
Rouxii, *Dum. & Bib.*
mystaceus, *Dum. & Bib.*
Chameleo vulgaris, *Daud.*

Ophidia.

Trimesurus viridis, *Lacep.*
Ceylonensis, *Gray.*
nigro-marginatus, *Gthr.*
Megæra trigonocephalus, *Latr.*
Trigonocephalus hypnalis, *Wagl.*
Daboia elegans, *Gray.*
Pelamys bicolor, *Daud.*
Aturia lapemoides, *Gray.*
Hydrophis sublævis, *Gray.*
Chersydrus granulatus, *Merr.*
Cerberus cinereus, *Gray.*
Tropidophis schistosus, *Daud.*
Python reticulatus, *Gray.*
Cylindrophis rufa, *Gray.*
maculata, *Linn.*
Aspidura brachyorrhos, *Boie.*
Haplocercus Ceylonensis, *Gthr.*
Oligodon subquadratus, *Dum. & Bib.*
subgriseus, *Dum. & Bib.*
sublineatus, *Dum. & Bib.*
Simotes Russellii, *Daud.*
purpurasceus, *Schleg.*
Ablabes collaris, *Gray.*
Tropidonotus quincunciatus, *Schleg.*
var. funebris.
var. carinatus.
stolatus, *Linn.*
chrysargus, *Boie.*
Cynophis Helena, *Daud.*
Coryphodon Blumenbachii, *Merr.*
Cyclophis calamaria, *Günther.*
Chrysopelea ornata, *Shaw.*
Dendrophis picta, *Gm.*
punctulata, *Gray.*
Dryiophis *prasina, Reinw.*
Passerita mycterizans, *Linn.*
var. fusca.
Dipsas *multimaculata, Reinw.*
Dipsadomorphus Ceylonensis, *Gray.*
Lycodon aulicus, *Dum. & Bib.*
Cercaspis carinata, *Kuhl.*
Bungarus fasciatus, *Schneid.*
Naja tripudians, *Merr.*

Chelonia.

Testudo stellata, *Schweig.*
Emys Sebæ, *Gray.*
Emyda Ceylonensis, *Gray.*
Caretta imbricata, Linn.
Chelonia virgata, Schweig.

Emydosauri.

Crocodylus biporcatus, *Cuv.*
palustris, *Less.*

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Batrachia.

Rana cutipora, *Dum. & Bib.*
Kuhlii, *Schleg.*
vittigera, *Weigm.*
robusta, *Blyth.*
tigrina, *Daud.*
Leschenaultii, *Dum. & Bib.*
Kandiana, *Kelaart.*
Neuera-elliana, *Kelaart.*
Rana Malabarica, *Dum. & Bib.*
Ixalus variabilis, *Gray.*
leucorhinus, *Martens.*
poecilopleurus, *Martens.*
aurifasciatus, *Dum. & Bib.*
Pyxicephalus fodiens, *Jerd.*
Polypedates leucomystax, *Grav.*
Polypedates microtympanum, *Gray.*
eques, *Gray.*
stellata, *Kelaart.*
schmardana, *Kelaart.*
Limnodytes lividus, *Blyth.*
macularis, *Blyth.*
mutabilis, *Kelaart.*
maculatus, *Kelaart.*
Bufo melanostictus, *Schneid.*
Kelaartii, *Gray.*
Engystoma marmoratum, *Cuv.*
rubrum, *Jerd.*
Kaloula pulchra, *Gray.*
balteata, *Günther.*

Pseudophidia.

Cæcilia glutinosa, *Linn.*

NOTE. — The following species are peculiar to Ceylon; and the genera Aspidura, Cercaspis, and Haplocercus would appear to be similarly restricted. Trimesurus Ceylonensis, T. nigro-marginatus; Megæra Trigonocephala; Trigonocephalus hypnalis; Daboia elegans; Cylindrophis maculata; Aspidura brachyorrhos; Haplocercus Ceylonensis; Oligodon sublineatus; Cynophis Helena; Cyclophis calamaria; Dipsadomorphus Ceylonensis; Cercaspis carinata; Ixalus variabilis, I. Leucorhinus, I. poecilopleurus; Polypedates microtympanum, P. eques.

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CHAP. IV.

FISHES.

LITTLE has been yet done to examine and describe the fishes of Ceylon, especially those which frequent the rivers and inland waters. Mr. Bennett, who was for some years employed in the Civil Service, directed his attention to the subject, and published in 1830 some portions of a projected work on the marine ichthyology of the island[1], but it never proceeded beyond the description of about thirty individuals. The great work of Cuvier and Valenciennes[2] particularises about one hundred species, specimens of which were procured from Ceylon by Reynard Leschenault and other correspondents, but of these not more than half a dozen belong to fresh water.

The fishes of the coast, so far as they have been examined, present few which are not common to the seas of Ceylon and India. A series of drawings, including upwards of six hundred species and varieties, of Ceylon fish, all made from recently-captured specimens, has been submitted to Professor Huxley, and a notice of their general characteristics forms an interesting article in the appendix to the present chapter.[3]

Of those in ordinary use for the table the finest by far is the Seir fish[4], a species of scomber, which is called *Tora-malu* by the natives. It is in size and form very similar to the salmon, to which the flesh of the female fish, notwithstanding its white colour, bears a very close resemblance both in firmness and flavour.

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[1] *A Selection of the most Remarkable and Interesting Fishes found on the Coast of Ceylon.* By J. W. BENNETT, Esq. London, 1830.

[2] *Histoire Naturelle des Poissons.*

[3] See note C to this chapter.

[4] Cybium (Scomber, *Linn.*) guttatum.

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Mackerel, dories, carp, whitings, mullet, red and striped, perches and soles, are abundant, and a sardine (*Sardinella Neohowii*, Val.) frequents the southern and eastern coast in such profusion that on one instance in 1839 a gentleman, who was present, saw upwards of four hundred thousand taken in a haul of the nets in the little bay of Goyapanna, east of Point-de-Galle. As this vast shoal approached the shore the broken water became as smooth as if a sheet of ice had been floating below the surface.[1]

Poisonous Fishes.—The sardine has the reputation of being poisonous at certain seasons, and accidents ascribed to its use are recorded in all parts of the island. Whole families of fishermen who have partaken of it have died. Twelve persons in the jail of Chilaw were thus poisoned about the year 1829; and the deaths of soldiers have repeatedly been ascribed to the same cause. It is difficult in such instances to say with certainty whether the fish were in fault; whether there may not have been a peculiar susceptibility in the condition of the recipients; or whether the mischief may not have been occasioned by the wilful administration of poison, or its accidental occurrence in the brass cooking vessels used by the natives. The popular belief was, however, deferred to by an order passed by the Governor in Council in February, 1824, which, after reciting that "Whereas it appears by information conveyed to the Government that at three several periods at Trincomalie death has been the consequence to several persons from eating the fish called Sardinia during the months of January and December," enacts that it shall not be lawful in that district to catch sardines during

[1] These facts serve to explain the story told by the friar Odoric of Friule, who visited India about the year 1320 A.D., and says there are "fishes in those seas that come swimming towards the said country in such abundance that for a great distance into the sea nothing can be seen but the backs of fishes, which casting themselves on the shore, do suffer men for the space of three daies to come and to take as many of them as they please, and then they return again into the sea."—*Hakluyt*, vol. ii. p. 57.

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these months, under pain of fine and imprisonment. This order is still in force, but the fishing continues notwithstanding.[1]

Sharks.—Sharks appear on all parts of the coast, and instances continually occur of persons being seized by them whilst bathing even in the harbours of Trincomalie and Colombo. In the Gulf of Manaar they are taken for the sake of their oil, of which they yield such a quantity that "shark's oil" is now a recognised export. A trade also exists in drying their fins, and from the gelatine contained in them, they find a ready market in China, to which the skin of the basking shark is also sent;—it is said to be there converted into shagreen.

Saw Fish.—The huge saw fish, the *Pristis antiquorum*[2], infests the eastern coast of the island[3], where it attains a length of from twelve to fifteen feet, including the powerful weapon from which its name is derived.

But the most striking to the eye of a stranger are those fishes whose brilliancy of colouring has won for them the wonder even of the listless Singhalese. Some,

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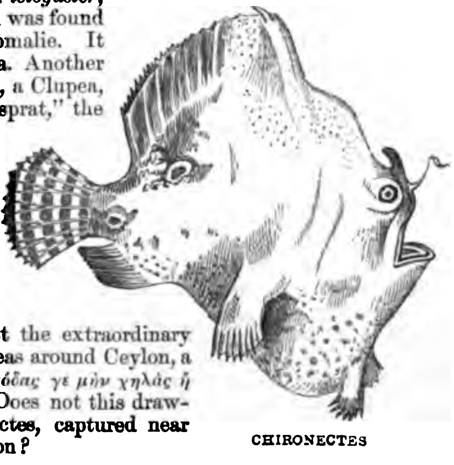
[1] There are two species of Sardine at Ceylon; the *S. neohowii*, Val., alluded to above, and the *S. leiogaster*, Val. and Cuv. xx. 270, which was found by Mr. Reynaud at Trincomalie. It occurs also off the coast of Java. Another Ceylon fish of the same group, a Clupea, is known as the "poisonous sprat," the bonito (*Scomber pelamys?*), the kangewena, or unicorn fish (*Balistes?*), and a number of others, are more or less in bad repute from the same imputation.

[2] Two other species are found in the Ceylon waters, *P. cuspidatus* and *P. pectinatus*.

[3] ÆLIAN mentions, amongst the extraordinary marine animals found in the seas around Ceylon, a fish *with feet instead of fins;* πόδας γε μὴν χηλὰς ἢ πτερύγια.—Lib. xvi. c. 18. Does not this drawing of a species of Chironectes, captured near Colombo, justify his description?



CHIRONECTES

like the Red Sea Perch (*Helocentrus ruber*, Bennett) and the Great Fire Fish[1], are of the deepest scarlet and flame colour; in others purple predominates, as in the *Serranus flavo-cæruleus*; in others yellow, as in the *Chætodon Brownriggii*[2], and *Acanthurus vittatus*, Bennett[3], and numbers, from the lustrous green of their scales, have obtained from the natives the appropriate name of *Giraway*, or *parrots*, of which one, the *Sparus Hardwickii* of Bennett, is called the "Flower Parrot," from its exquisite colouring, being barred with irregular bands of blue, crimson, and purple, green, yellow, and grey, and crossed by perpendicular stripes of black.

Fresh-water Fishes.—Of the fresh-water fish, which inhabit the rivers and tanks, so very little has hitherto been known to naturalists[4], that of nineteen drawings

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[1] *Pterois muricata*, Cuv. and Val. iv. 363. *Scorpæna miles*, Bennett; named, by the Singhalese, "*Maha-rata-gini*," the Great Red Fire, a very brilliant red species spotted with black. It is very voracious, and is regarded on some parts of the coast as edible, while on others it is rejected. Mr. Bennett has given a drawing of this species, (pl. 9), so well marked by the armature of the head. The French naturalists regard this figure as being only a highly-coloured variety of their species "dont l'éclat est occasionné par la saison de l'amour." It is found in the Red Sea and Bourbon and Penang. Dr. CANTOR calls it *Pterois miles*, and reports that it preys upon small crustaceæ. — *Cat. Malayan Fishes*, p. 44.

[2] *Glyphisodon Brownriggii*, Cuv. and Val. v. 484; *Chætodon Brownriggii*, Bennett. A very small fish about two inches long, called *Kaha bartikyha* by the natives. It is distinct from Chœtodon, in which Mr. Bennett placed it. Numerous species of this genus are scattered throughout the Indian Ocean. It derives its name from the fine hair-like character of its teeth. They are found chiefly among coral reefs, and, though eaten, are not much esteemed. In the French colonies they are called "Chauffe-soleil." One species is found on the shores of the New World (*G. saxatilis*), and it is curious that Messrs. Quoy and Gaimard found this fish at the Cape de Verde Islands in 1827.

[3] This fish has a sharp round spine on the side of the body near the tail; a formidable weapon, which is generally partially concealed within a scabbard-like incision. The fish raises or depresses this spine at pleasure. It is yellow, with several nearly parallel blue stripes on the back and sides; the belly is white, the tail and fins brownish green, edged with blue. It is found in rocky places; and according to Mr. Bennett, who has figured it in his second plate, it is named *Seweya*. It is scarce on the southern coast of Ceylon.

[4] In extenuation of the little that is known of the fresh-water fishes of Ceylon, it may be observed that very few of them are used at table by Europeans, and there is therefore no stimulus on the part of the natives to catch them. The burbot and grey mullet are occasionally eaten, but they taste of mud, and are not in request.

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sent home by Major Skinner in 1852, although specimens of well-known genera, Colonel Hamilton Smith pronounced nearly the whole to be new and undescribed species.

Of eight of these, which were from the Mahawelli-ganga, and caught in the vicinity of Kandy, five were carps[1], of which two were *Leucisci*, and one a *Mastacemblus*, to which Col. H. Smith has given the name of its discoverer, *M. Skinneri*[2], one was an *Ophicephalus*, and one a *Polyacanthus*, with no serræ on the gills. Six were from the Kalany-ganga, close to Colombo, of which two were *Helastoma*, in shape approaching the Chœtodon; two *Ophicephali*, one a *Silurus*, and one an *Anabas*, but the gills were without denticulation. From the still water of the lake, close to the walls of Colombo, there were two species of *Eleotris*, one *Silurus* with barbels, and two *Malacopterygians*, which appear to be *Bagri*.

In this collection, brought together without premeditation, the naturalist will be struck by the preponderance of those genera which are adapted by nature to endure a temporary privation of moisture; and this, taken in connection with the vicissitudes affecting the waters they inhabit, exhibits a surprising illustration of the wisdom of the Creator in adapting the organisation of His creatures to the peculiar circumstances under which they are destined to exist.

So abundant are fish in all parts of the island, that, Knox says, not the running streams alone, but the reservoirs and ponds, "nay, every ditch and little plash of water but ankle deep hath fish in it."[3] But many of

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[1] Of the fresh-water fishes belonging to the family Cyprinidæ, there are about eighteen species from Ceylon in the collection of the British Museum.

[2] This fish bears the native name of *Theliya* in Major Skinner's list; and is described by Colonel Hamilton Smith as being "of the proportions of an eel, beautifully mottled, with eyes and spots of a lighter olive upon a dark green." This so nearly corresponds with a fish of the same name, *Theliya*, which was brought to Gronovius from Ceylon, and proved to be identical with the *Aral* of the Coromandel coast, that it may be doubtful whether it be not the individual already noted by Cuvier as *Rhyncobdella ocellata*, Cuv. and Val. viii. 445.

[3] Knox's *Historical Relation of Ceylon*, Part I. ch. vii. The occurrence of fish in the most unlooked-

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these reservoirs and tanks are, twice in each year, liable to be evaporated to dryness till the mud of the bottom is converted into dust, and the clay cleft by the heat into gaping apertures. Yet within a very few days after the change of the monsoon, the natives are busily engaged in fishing in those very spots and in the hollows contiguous to them, although entirely unconnected with any pool or running streams; in the way in which Knox described nearly 200 years ago, with a funnel-shaped basket, open at bottom and top, which, as he says, they "jibb down, and the end sticks in the mud, which often happens upon a fish; which, when they feel beating itself against the sides, they put in their hands and take it out, and reive a ratan through their gills, and so let them drag after them."[1]

FROM KNOX'S CEYLON, A.D. 1681.

This operation may be seen in the lowlands, which are traversed by the high road leading from Colombo to Kandy, the hollows on either side of which, before the

for situations, is one of the mysteries of other eastern countries as well as Ceylon and India. In Persia irrigation is carried on to a great extent by means of wells sunk in line in the direction in which it is desired to lead a supply of water, and these are connected by channels, which are carefully arched over to protect them from evaporation. These *kanats*, as they are called, are full of fish, although neither they nor the wells they unite have any connection with streams or lakes.

[1] Knox, *Historical Relation of Ceylon*, Part I. ch. vii.

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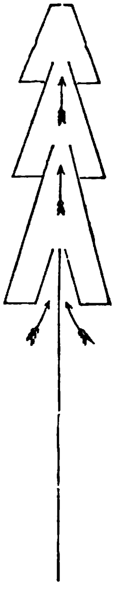
change of the monsoon, are covered with dust or stunted grass; but when flooded by the rains, they are immediately resorted to by the peasants with baskets, constructed precisely as Knox has stated, in which the fish are encircled and taken out by the hand.[1]

So singular a phenomenon as the sudden reappearance of full-grown fishes in places which a few days before had been encrusted with hardened clay, has not failed to attract attention; but the European residents have been contented to explain it by hazarding the conjecture, either that the spawn had lain imbedded in the dried earth till released by the rains, or that the fish, so unexpectedly discovered, fall from the clouds during the deluge of the monsoon.

As to the latter conjecture; the fall of fish during showers, even were it not so problematical in theory, is too rare an event to account for the punctual appearance of those found in the rice-fields, at stated periods of the year. Both at Galle and Colombo in the south-west monsoon, fish are popularly thought to have fallen from the clouds during violent showers, but those found on the occasions that give rise to this belief, consist of the smallest fry, such as could be caught up by waterspouts, and vortices analogous to them, or otherwise blown on shore from the surf; whereas those which suddenly appear in the replenished tanks and in the hollows which they overflow, are mature and well-grown fish.[2] Besides, the



FISH CORRAL.

[1] As anglers, the native Singhalese exhibit little expertness; but for fishing the rivers, they construct with singular ingenuity fences formed of strong stakes, protected by screens of ratan, which stretch diagonally across the current; and along these the fish are conducted into a series of enclosures from which retreat is impracticable. Mr. LAYARD, in the *Magazine of Natural History* for May, 1853, has given a diagram of one of these fish "corrals," as they are called.

[2] I had an opportunity, on one occasion only, of witnessing the phenomenon which gives rise to this popular belief. I was driving in the cinnamon gardens near the fort of Colombo, and saw a violent but partial shower descend at no great distance before me. On

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latter are found, under the circumstances I have described, in all parts of the interior, whilst the prodigy of a supposed fall of fish from the sky has been noticed, I apprehend, only in the vicinity of the sea, or of some inland water.

The surmise of the buried spawn is one sanctioned by the very highest authority. Mr. YARRELL in his "*History of British Fishes*," adverting to the fact that ponds which had been previously converted into hardened mud, are replenished with small fish in a very few days after the commencement of each rainy season, offers this solution of the problem as probably the true one, "the impregnated ova of the fish of one rainy season, are left unhatched in the mud through the dry season, and from their low state of organisation as ova, the vitality is preserved till the recurrence, and contact of the rain and oxygen in the next wet season, when vivification takes place from their joint influence."[1]

This hypothesis, however, appears to have been offered upon imperfect data; for although some fish

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coming to the spot I found a multitude of small silvery fish from one and a half to two inches in length, leaping on the gravel of the high road, numbers of which I collected and brought away in my palankin. The spot was about half a mile from the sea, and entirely unconnected with any watercourse or pool.

Mr. WHITING, who was many years resident at Trincomalie, writes me that he "had often been told by the natives on that side of the island that it sometimes rained fishes; and on one occasion (he adds) I was taken by them, in 1849, to a field at the village of Karran-cotta-tivo, near Batticaloa, which was dry when I passed over it in the morning, but had been covered in two hours by sudden rain to the depth of three inches, in which there was then a quantity of small fish. The water had no connection with any pond or stream whatsoever." Mr. CRIPPS, in like manner, in speaking of Galle, says: "I have seen in the vicinity of the fort, fish taken from rain-water that had accumulated in the hollow parts of land that in the hot season are perfectly dry and parched. The place is accessible to no running stream or tank; and either the fish, or the spawn from which they were produced, must of necessity have fallen with the rain."

Mr. J. PRINSEP, the eminent secretary to the Asiatic Society of Bengal, found a fish in the pluviometer at Calcutta, in 1838.—*Journ. Asiat. Soc. Bengal*, vol. vi. p. 465.

A series of instances in which fishes have been found on the continent of India under circumstances which lead to the conclusion that they must have fallen from the clouds, have been collected by Dr. BUIST of Bombay, and will be found in the appendix to this chapter.

[1] YARRELL, *History of British Fishes,* introd. vol. i. p. xxvi.

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like the salmon scrape grooves in the sand and place their spawn in inequalities and fissures; yet as a general rule spawn is deposited not beneath but on the surface of the ground or sand over which the water flows, the adhesive nature of each egg supplying the means of attachment. But in the Ceylon tanks not only is the surface of the soil dried to dust after the evaporation of the water, but the earth itself, twelve or eighteen inches deep, is converted into sun-burnt clay, in which, although the eggs of mollusca, in their calcareous covering, are in some instances preserved, it would appear to be as impossible for the ova of fish to be kept from decomposition as for the fish themselves to sustain life. Besides, moisture in such situations is only to be found at a depth to which spawn could not be conveyed by the parent fish, by any means with which we are yet acquainted.

But supposing it possible to carry the spawn sufficiently deep, and to deposit it safely in the mud below, which is still damp, whence it could be liberated on the return of the rains, a considerable interval would still be necessary after the replenishing of the ponds with water to admit of vivification and growth. But so far from this interval being allowed to elapse, the rains have no sooner ceased than the fishing of the natives commences, and those captured in wicker cages are mature and full grown instead of being "small fish" or fry, as affirmed by Mr. Yarrell.

Even admitting the soundness of his theory, and the probability that, under favourable circumstances, the spawn in the tanks might be preserved during the dry season so as to contribute to the perpetuation of their inhabitants, the fact is no longer doubtful, that adult fish in Ceylon, like some of those that inhabit similar waters both in the New and Old World, have been endowed by the Creator with the singular faculty of providing against the periodical droughts either by journeying overland in search of still unexhausted water, or, on its utter disap-

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pearance, by burying themselves in the mud to await the return of the rains.

Travelling Fishes. — It was well known to the Greeks that certain fishes of India possessed the power of leaving the rivers and returning to them again after long migrations[1] on dry land, and modern observation has fully confirmed their statements. The fish leave the pools and nullahs in the dry season, and led by an instinct as yet unexplained, shape their course through the grass towards the nearest pool of water. A similar phenomenon is observable in countries similarly circumstanced. The Doras of Guiana[2] have been seen travelling over land during the dry season in search of their natural element[3], in such droves that the negroes have filled baskets with them during these terrestrial excursions.

Pallegoix in his account of Siam, enumerates three species of fishes which leave the tanks and channels and traverse the damp grass[4]; and Sir John Bowring, in his account of the embassy to the Siamese kings in 1855, states, that in ascending and descending the river Meinam to Bankok, he was amused with the novel sight of fish leaving the river, gliding over the wet banks, and losing themselves amongst the trees of the jungle.[5]

The class of fishes which possesses this power are chiefly

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[1] I have collected into a note, which will be found in the appendix to this chapter, the opinions entertained by the Greeks and Romans upon this habit of the fresh-water fishes of India. See note B.

[2] *D. Hancockii*, Cuv. et Val.

[3] Sir R. Schomburgk's *Fishes of Guiana*, vol. i. pp. 113, 151, 160. Another migratory fish was found by Bosc very numerous in the fresh waters of Carolina and in ponds liable to become dry in summer. When captured and placed on the ground, "they *always directed themselves towards the nearest water, which they could not possibly see*, and which they must have discovered by some internal index. They belong to the genus *Hydragyra*, and are called Swampines. — KIRBY, *Bridgewater Treatise*, vol. i. p. 143.

Eels kept in a garden, when August arrived (the period at which instinct impels them to go to the sea to spawn) were in the habit of leaving the pond and were invariably found moving eastward *in the direction of the sea.* — YARRELL, vol. ii. p. 384. Anglers observe that fish newly caught, when placed out of sight of water, always struggle towards it to escape.

[4] PALLEGOIX, vol. i. p. 144.

[5] Sir J. BOWRING'S *Siam*, vol. i. p. 10.

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those with labyrinthiform pharyngeal bones, so disposed in plates and cells as to retain a supply of moisture, which, whilst crawling on land, gradually exudes so as to keep the gills damp.[1]

The individual which is most frequently seen in these excursions in Ceylon is a perch called by the Singhalese *Kavaya* or *Kawhy-ya*, and by the Tamils *Pannei-eri*, or *Sennal*. It is closely allied to, if not identical with, the *Anabas scandens* of Cuvier, the *Perca scandens* of Daldorf. It grows to about six inches in length, the head round and covered with scales, and the edges of the gill-covers strongly denticulated. Aided by the apparatus already adverted to in its head, this little creature issues boldly from its native pools and addresses itself to its toilsome march generally at night or in the early morning, whilst the grass is still damp with the dew; but in its distress it is sometimes compelled to travel by day, and Mr. E. L. Layard on one occasion encountered a number of them travelling along a hot and dusty gravel road under the midday sun.[2]

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[1] CUVIER and VALENCIENNES, *Hist. Nat. des Poissons*, tom. vii. p. 246.

[2] *Annals and Mag. of Nat. Hist.*, May, 1853, p. 390. Mr. Morris, the government-agent of Trincomalie, writing to me on this subject in 1856, says—"I was lately on duty inspecting the bund of a large tank at Nade-cadua, which, being out of repair, the remaining water was confined in a small hollow in the otherwise dry bed. Whilst there heavy rain came on, and, as we stood on the high ground, we observed a pelican on the margin of the shallow pool gorging himself; our people went towards him and raised a cry of fish! fish! We hurried down, and found numbers of fish struggling upwards through the grass in the rills formed by the trickling of the rain. There was scarcely water enough to cover them, but nevertheless they made rapid progress up the bank, on which our followers collected about two bushels of them at a distance of forty yards from the tank. They were forcing their way up the knoll, and, had they not been intercepted first by the pelican and afterwards by ourselves, they would in a few minutes have gained the highest point and descended on the other side into a pool which formed another portion of the tank. They were chub, the same as are found in the mud after the tanks dry up." In a subsequent communication in July, 1857, the same gentleman says—"As the tanks dry up the fish congregate in the little pools till at last you find them in thousands in the moistest parts of the beds, rolling in the blue mud which is at that time about the consistence of thick gruel."

"As the moisture further evaporates the surface fish are left uncovered, and they crawl away in

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Referring to the *Anabas scandens*, Mr. Hamilton Buchanan says, that of all the fish with which he was acquainted it is the most tenacious of life; and he has known boatmen on the Ganges to keep them for five or six days in an earthen pot without water, and daily to use what they wanted, finding them as lively and fresh as when caught.[1] Two Danish naturalists residing at Tranquebar, have contributed their authority to the fact of this fish ascending trees on the coast of Coromandel, an exploit from which it acquired its epithet of *Perca scandens.* Daldorf, who was a lieutenant in the Danish East India Company's service, communicated to Sir Joseph Banks, that in the year 1791 he had taken this fish from a moist cavity in the stem of a Palmyra palm, which grew near a lake. He saw it when already five feet above the ground struggling to ascend still higher; — suspending itself by its gill-covers, and bending its tail to the left, it fixed its anal fin in the cavity of the bark, and sought by expanding its body to urge its way upwards, and its march was only arrested by the hand with which he seized it.[2]

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search of fresh pools. In one place I saw hundreds diverging in every direction, from the tank they had just abandoned to a distance of fifty or sixty yards, and still travelling onwards. In going this distance, however, they must have used muscular exertion sufficient to have taken them half a mile on level ground, for at these places all the cattle and wild animals of the neighbourhood had latterly come to drink; so that the surface was everywhere indented with footmarks in addition to the cracks in the surrounding baked mud, into which the fish tumbled in their progress. In those holes which were deep and the sides perpendicular they remained to die, and were carried off by kites and crows."

"My impression is that this migration takes place at night or before sunrise, for it was only early in the morning that I have seen them progressing, and I found that those I brought away with me in chatties appeared quiet by day, but a large proportion managed to get out of the chatties at night — some escaped altogether, others were trodden on and killed."

"One peculiarity is the large size of the vertebral column, quite disproportioned to the bulk of the fish. I particularly noticed that all in the act of migrating had their gills expanded."

1 *Fishes of the Ganges*, 4to. 1822.

2 *Transactions Linn. Soc.* vol. iii. p. 63. It is remarkable, however, that this discovery of Daldorf, which excited so great an interest in 1791, had been anticipated by an Arabian voyager a thousand years before. Abou-zeyd, the compiler of the remarkable MS. known since Renaudot's translation by the title of

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There is considerable obscurity about the story of this ascent, although corroborated by M. John. Its motive for climbing is not apparent, since water being close at hand it could not have gone for sake of the moisture contained in the fissures of the palm; nor could it be in search of food, as it lives not on fruit but on aquatic insects.[1] The descent, too, is a question of difficulty. The position of its fins, and the spines on its gill-covers, might assist its journey upwards, but the same apparatus would prove anything but a facility in steadying its journey down. The probability is, as suggested by Buchanan, that the ascent which was witnessed by Daldorf was accidental, and ought not to be regarded as the habit of the animal. In Ceylon I heard of no instance of the perch ascending trees[2], but the fact is well established that both it, the *pullata* (a species of polyacanthus), and others, are capable of long journeys on the level ground.[3]

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the *Travels of Two Mahometans*, states that Suleyman, one of his informants, who visited India at the close of the ninth century, was told there of a fish which, issuing from the waters, ascended the coco-nut palms to drink their sap, and returned to the sea. "On parle d'un poisson de mer que sortant de l'eau, monte sur la cocotier et boit le suc de la plante; ensuite il retourne à la mer." See REINAUD, *Relations des Voyages faits par les Arabes et Persans dans le neuvième siècle*, tom. i. p. 21, tom. ii. p. 93.

[1] Kirby says that it is "in pursuit of certain crustaceans that form its food" (*Bridgewater Treatise*, vol. i. p. 144); but I am not aware of any crustaceans in the island which ascend the palmyra or feed upon its fruit. Birgus latro, which inhabits Mauritius and is said to climb the coco-nut for this purpose, has not been observed in Ceylon.

[2] This assertion must be qualified by a fact stated by Mr. E. A. Layard, who mentions that on visiting one of the fishing stations on a Singhalese river, where the fish are caught in staked enclosures, as described at p. 212, and observing that the chambers were covered with netting, he asked the reason, and was told "*that some of the fish climbed up the sticks and got over.*"—*Mag. Nat. Hist.* for May, 1823, p. 390-1.

[3] Strange accidents have more than once occurred in Ceylon arising from the habit of the native anglers; who, having neither baskets nor pockets in which to place what they catch, will seize a fish in their teeth whilst putting fresh bait on their hook. In August, 1853, a man was carried into the Pettah hospital at Colombo, having a climbing perch, which he thus attempted to hold, firmly imbedded in his throat. The spines of its dorsal fin prevented its descent, whilst those of the gill-covers equally forbade its return. It was eventually extracted by the forceps through an incision in the œsophagus, and the patient recovered. Other similar cases have proved fatal.

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Burying Fishes.—But a still more remarkable power possessed by some of the Ceylon fishes, is that of secreting themselves in the earth in the dry season, at the bottom of the exhausted ponds, and there awaiting the renewal of the water at the change of the monsoon.

The instinct of the crocodile to resort to the same expedient has been already referred to[1], and in like manner the fish, when distressed by the evaporation of the tanks, seek relief by immersing first their heads, and by degrees their whole bodies, in the mud; and sinking to a depth at which they find sufficient moisture to preserve life in a state of lethargy long after the bed of the tank has been consolidated by the intense heat of the sun. It is possible, too, that the cracks which reticulate the surface may admit air to some extent to sustain their faint respiration.

The same thing takes place in other tropical regions, subject to vicissitudes of drought and moisture. The Protopterus[2] which inhabits the Gambia (and which, though demonstrated by Professor Owen to possess all the essential organisation of fishes, is nevertheless provided with true lungs), is accustomed in the dry season, when the river retires into its channel, to bury itself to the depth of twelve or sixteen inches in the indurated mud of the banks, and to remain in a state of torpor till the rising of the stream after the rains enables it to resume its active habits. At this period the natives of the Gambia, like those of Ceylon, resort to the river, and secure the fish in considerable numbers as they flounder in the still shallow water. A parallel instance occurs in Abyssinia in relation to the fish of the Mareb, one of the sources of the Nile, the waters of which are partially absorbed in traversing the plains of Taka. During the summer its bed is dry, and in the slime at the depth of more than six feet is found a species

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[1] See *ante*, P. II. ch. iii. p. 189.
[2] *Lepidosiren annectans*, Owen. See *Linn. Trans.* 1839.

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of fish without scales, different from any known to inhabit the Nile.[1]

In South America the "round-headed hassar" of Guiana, *Callicthys littoralis*, and the "yarrow," a species of the family Esocidæ, although they possess no specially modified respiratory organs, are accustomed to bury themselves in the mud on the subsidence of water in the pools during the dry season.[2] The *Loricaria* of Surinam, another Siluridan, exhibits a similar instinct, and resorts to the same expedient. Sir R. Schomburgk, in his account of the fishes of Guiana, confirms this account of the Callicthys, and says "they can exist in muddy lakes without any water whatever, and great numbers of them are sometimes dug up from such situations."

In those portions of Ceylon where the country is flat, and small tanks are extremely numerous, the natives in the hot season are accustomed to dig in the mud for fish. Mr. Whiting, the chief civil officer of the eastern

[1] This statement will be found in QUATREMERE'S *Memoires sur l'Egypte*, tom. i. p. 17, on the authority of Abdullah ben Ahmed ben Solaim Assouany, in his *History of Nubia*, "Simon, héritier présomptif du royaume d'Alouah, m'a assuré que l'on trouve, dans la vase qui couvre le fond de cette rivière, un grand poisson sans écailles, qui ne resemble en rien aux poissons du Nil, et que, pour l'avoir, il faut creuser à une toise et plus de profondeur." To this passage there is appended this note:—"Le patriarche Mendes, cité par Legrand (*Relation Hist. d'Abyssinie*, du P. LOBO, p. 212-3) rapporte que le fleuve Mareb, après avoir arrosé une étendue de pays considérable, se perd sous terre; et que quand les Portugais faisaient la guerre dans ce pays, its fouilloient dans le sable, et y trouvoient de la bonne eau et du bon poisson. Au rapport de l'auteur de *l'Ayin Akbery* (tom. ii. p. 146, ed. 1800), dans le Soubah de Caschmir, près du lieu nommé Tilahmoulah, est une grande pièce de terre qui est inondée pendant la saison des pluies. Lorsque les eaux se sont évaporées, et que la vase est presque sèche, les habitans prennent des bâtons d'environ une aune de long, qu'ils enfoncent dans la vase, et ils y trouvent quantité de grands et petits poissons." In the library of the British Museum there is an unique MS. of MANOEL DE ALMEIDA, written in the sixteenth century, from which Balthasar Tellez compiled his *Historia General de Ethiopia alta*, printed at Coimbra in 1660, and in it the above statement of Mendes is corroborated by Almeida, who says that he was told by João Gabriel, a Creole Portuguese, born in Abyssinia, who had visited the Merab, and who said that the "fish were to be found everywhere eight or ten palms down, and that he had eaten of them."

[2] See Paper "*on some Species of Fishes and Reptiles in Demerara*," by J. HANDCOCK, Esq., M.D., *Zoological Journal*, vol. iv. p. 243.

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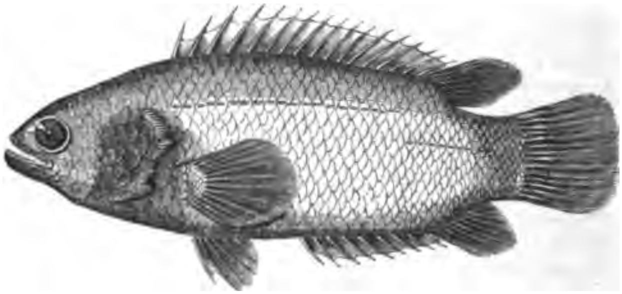
province, informs me that, on two occasions, he was present accidentally when the villagers were so engaged, once at the tank of Moeletivoe, within a few miles of Kottiar, near the bay of Trincomalie, and again at a tank between Ellendetorre and Arnetivoe, on the bank of the Vergel river. The clay was firm, but moist, and as the men flung out lumps of it with a spade, it fell to pieces, disclosing fish from nine to twelve inches long, which were full grown and healthy, and jumped on the bank when exposed to the sun light.

Being desirous of obtaining a specimen of the fish so exhumed, I received from the Moodliar of Matura, A. B. Wickremeratne, a fish taken along with others of the same kind from a tank in which the water had dried up; it was found at a depth of a foot and a half where the mud was still moist, whilst the surface was dry and hard. The fish which the moodliar sent to. me proved to be an Anabas, and closely resembles the *Perca scandens* of Daldorf.



THE ANABAS OF THE DRY TANKS.

But the faculty of becoming torpid at such periods is not confined in Ceylon to the crocodiles and fishes, it is equally possessed by some of the fresh-water mollusca and aquatic coleoptera. The largest of the former, the *Ampullaria glauca*, is found in still water in all parts of the island, not alone in the tanks, but in rice-fields and the watercourses by which they are irrigated. There it deposits a bundle of eggs with a white calcareous shell, to the number of one hundred and more

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in each group, at a considerable depth in the soft mud, under which, when the water is about to evaporate during the dry season, it burrows and conceals itself[1] till the returning rains restore it to liberty, and reproduce its accustomed food. The *Melania Paludina* in the same way retires during the droughts into the muddy soil of the rice lands; and it can only be by such an instinct that this and other mollusca are preserved when the tanks evaporate, to re-appear in full growth and vigour immediately on the return of the rains.[2]

Dr. John Hunter[3] has advanced the opinion that hybernation, although a result of cold, is not its immediate consequence, but is attributable to that deprivation of food and other essentials which extreme cold occasions, and against the recurrence of which nature makes a timely provision by a suspension of her functions. Ex-

[1] A knowledge of this fact was turned to prompt account by Mr. Edgar L. Layard, when holding a judicial office at Point Pedro in 1849. A native who had been defrauded of his land complained before him of his neighbour, who, during his absence, had removed their common landmark by diverting the original watercourse and obliterated its traces by filling it to a level with the rest of the field. Mr. Layard directed a trench to be sunk at the contested spot, and discovering numbers of the Ampullaria, the remains of the eggs, and the living animal which had been buried for months, the evidence was so resistless as to confound the wrong-doer, and terminate the suit.

[2] For a similar fact relative to the shells and water-beetles in the pools near Rio Janeiro, see DARWIN's *Nat. Journal*, ch. v. p. 99. BENSON, in the first vol. of *Gleanings of Science*, published at Calcutta in 1829, describes a species of *Paludina* found in pools, which are periodically dried up in the hot season but reappear with the rains, p. 363. And in the *Journal of the Asiatic Soc. of Bengal* for Sept. 1832, Lieut. HUTTON, in a singularly interesting paper, has followed up the same subject by a narrative of his own observations at Mirzapore, where, in June, 1832, after a few heavy showers of rain which formed pools on the surface of the ground near a mango grove, he saw the *Paludinæ* issuing from the ground, "pushing aside the moistened earth and coming forth from their retreats; but on the disappearance of the water not one of them was to be seen above ground. Wishing to ascertain what had become of them, he turned up the earth at the base of several trees, and invariably found the shells buried from an inch to two inches below the surface." Lieut. Hutton adds that the *Ampullariæ* and *Planorbes*, as well as the *Paludinæ*, are found in similar situations during the heats of the dry season. The British *Pisidea* exhibit the same faculty (see a monograph in the *Camb. Phil. Trans.* vol. iv.). The fact is elsewhere alluded to in the present work of the power possessed by the land leech of Ceylon of retaining vitality even after being parched to hardness during the heat of the rainless season. Vol. I. ch. vii. p. 312.

[3] HUNTER's *Observations on parts of the Animal Œconomy*, p. 88.

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cessive heat in the tropics produces an effect upon animals and vegetables analogous to that of excessive cold in northern regions, and hence it is reasonable to suppose that the torpor induced by the one may be but the counterpart of the hybernation which results from the other. The frost which imprisons the alligator in the Mississippi as effectually cuts him off from food and action as the drought which incarcerates the crocodile in the sun-burnt clay of a Ceylon tank. The hedgehog of Europe enters on a period of absolute torpidity as soon as the inclemency of winter deprives it of its ordinary supply of slugs and insects; and the *Tenrec*[1] of Madagascar, its tropical representative, exhibits the same tendency during the period when excessive heat produces in that climate a like result.

The descent of the *Ampullaria*, and other fresh-water molluscs, into the mud of the tank, has its parallel in the conduct of the *Bulimi* and *Helices* on land. The European snail, in the beginning of winter, either buries itself in the earth or withdraws to some crevice or overarching stone to await the returning vegetation of spring. So, in the season of intense heat, the *Helix Waltoni* of Ceylon, and others of the same family, before retiring under cover, close the aperture of their shells with an impervious epiphragm, which effectually protects their moisture and juices from evaporation during the period of their æstivation. The Bulimi of Chili have been found alive in England in a box packed in cotton after an interval of two years, and the animal inhabiting a land-shell from Suez, which was attached to a tablet and deposited in the British Museum in 1846, was found in 1850 to have formed a fresh epiphragm, and on being immersed in tepid water, it emerged from its shell. It became torpid again on the 15th November, 1851, and was found dead and dried up in March, 1852.[2] But the exceptions serve to prove

[1] *Centetes ecaudatus*, Illiger.

[2] *Annals of Natural History*, 1850. See Dr. BAIRD's *Account of Helix desertorum; Excelsior, &c.*, ch. i. p. 345.

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the accuracy of Hunter's opinion almost as strikingly as accordances, since the same genera of animals which hybernate in Europe, where extreme cold disarranges their œconomy, evince no symptoms of lethargy in the tropics, provided their food be not diminished by the heat. Ants, which are torpid in Europe during winter, work all the year round in India, where sustenance is uniform.[1] The Shrews of Ceylon (*Sorex montanus* and *S. ferrugineus* of Kelaart) which, like those at home, subsist upon insects, inhabit a region where the equable temperature admits of the pursuit of their prey at all seasons of the year; and hence, unlike those of Europe, they never hybernate. A similar observation applies to the bats, which are dormant during a northern winter when insects are rare, but never become torpid in any part of the tropics.

The bear, in like manner, is nowhere deprived of its activity except when the rigour of severe frost cuts off its access to its accustomed food. On the other hand, the tortoise, which immerses itself in indurated mud during the hot months in Venezuela, shows no tendency to torpor in Ceylon, where its food is permanent; and yet is subject to hybernation when carried to the colder regions of Europe.

To the fish in the detached tanks and pools when the heat, by exhausting the water, deprives them at once of motion and sustenance, the practical effect must be the same as when the frost of a northern winter encases them in ice. Nor is it difficult to believe that they can successfully undergo the one crisis when we know beyond question that they may survive the other.[2]

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[1] Colonel SYKES has described in the *Entomological Trans.* the operations of an ant which laid up a store of hay against the rainy season.

[2] YARRELL, vol. i. p. 364, quotes the authority of Dr. J. Hunter in his *Animal Œconomy*, that fish "after being frozen still retain so much of life as when thawed to resume their vital actions;" and in the same volume (*Introd.* vol. i. p. xvii.) he relates from JESSE's *Gleanings in Natural History*, the story of a gold fish (*Cyprinus auratus*) which, together with the water in a marble basin, was frozen into one solid lump of ice, yet,

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Hot-water Fishes. — Another incident is striking in connection with the fresh-water fishes of Ceylon. I have mentioned elsewhere the hot springs of Kannea, in the vicinity of Trincomalie, the water in which flows at a temperature varying at different seasons from 85° to 115°. In the stream formed by these wells M. Reynaud found and forwarded to Cuvier two fishes which he took from the water at a time when his thermometer indicated a temperature of 37° Reaumur, equal to 115° of Fahrenheit. The one was an Apogon, the other an Ambassis, and to each, from the heat of its habitat, he assigned the specific name of "Thermalis." [1]

List of Ceylon Fishes.

I. OSSEOUS.

Acanthopterygii.

Perca argentea, *Bennett.*
Apogon roseipinnis, *Cuv. & Val.*
  Zeylonicus, *Cuv. & Val.*
  thermalis, *Cuv. & Val.*
Ambassis thermalis, *Cuv. & Val.*
Serranus biguttatus, *Cuv. & Val.*
  Tankervillæ, *Benn.*
  lemniscatus, *Cuv. & Val.*
  Sonneratii, *Cuv. & Val.*
  flavo-ceruleus, *Lacep.*
  marginalis, *Cuv. & Val.*
  Boelang, *Cuv. & Val.*
Serranus faveatus, *Cuv. & Val.*
  angularis, *Cuv. & Val.*
  punctulatus, *Cuv. & Val.*
Diacope decem-lineatus, *Cuv. & Val.*
  spilura, *Benn.*
  xanthopus, *Cuv. & Val.*
Mesoprion annularis, *Cuv. & Val.*
Holocentrus orientale, *Cuv. & Val.*
  spinifera, *Cuv. & Val.*
  argenteus, *Cuv. & Val.*
Upeneus tæniopterus, *Cuv. & Val.*
  Zelonicus, *Cuv. & Val.*
  Russeli, *Cuv. & Val.*
  cinnabarinus, *Cuv. & Val.*
Platycephalus punctatus, *Cuv. & Val.*

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on the water being thawed, the fish became as lively as usual. Dr. Richardson, in the third vol. of his *Fauna Borealis Americana*, says the grey sucking carp, found in the fur countries of North America, may be frozen and thawed again without being killed in the process.

[1] Cuv. and Val., vol. iii. p. 363. In addition to the two fishes above named, a loche, *Cobitis thermalis*, and a carp, *Nuria thermoicos*, were found in the hot-springs of Kannea, at a heat 40° Cent., 114° Fahr., and a roach, *Leuciscus thermalis*, when the thermometer indicated 50° Cent., 122° Fahr. —*Ib.* xviii. p. 59, xvi. p. 182, xvii. p. 94. Fish have been taken from a hot spring at Pooree when the thermometer stood at 112° Fahr., and as they belonged to a carnivorous genus, they must have found prey living in the same high temperature.—*Journ. Asiatic Soc. Beng.* vol. vi. p. 465. Fishes have been observed in a hot spring at Manilla which raises the thermometer to 187°, and in another in Barbary, the usual temperature of which is 172°; and Humboldt and Bonpland, when travelling in South America, saw fishes thrown up alive from a volcano, in water that raised the temperature to 210°, being two degrees below the boiling point. Patterson's *Zoology*, Pt. ii. p. 211; Yarrell's *History of British Fishes*, vol. i. In. p. xvi.

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scaber, *Linn.*
tuberculatus, *Cuv. & Val.*
serratus, *Cuv. & Val.*
Pterois volitans, *Gm.*
muricata, *Cuv. & Val.*
Diagramma cinerascens, *Cuv. & Val.*
Blochii, *Cuv. & Val.*
pœciloptera, *Cuv. & Val.*
Cuvieri, *Benn.*
Sibbaldi, *E. Benn.*
Lobotes erate, *Cuv. & Val.*
Scolopsides bimaculatus, *Rupp.*
Amphiprion Clarkii, *J. Benn.*
Dascyllus aruanus, *Cuv. & Val.*
Glyphisodon Rahti, *Cuv. & Val.*
Brownrigii, *Benn.*
Sparus Hardwickii, *J. Benn.*
Pagrus longifilis, *Cuv. & Val.*
Lethrinus opercularis, *Cuv. & Val.*
fasciatus, *Cuv. & Val.*
frænatus, *Cuv. & Val.*
erythrurus, *Cuv. & Val.*
cinereus, *Cuv. & Val.*
Smaris balteatus, *Cuv. & Val.*
Cæsio cœrulaureus, *Lacep.*
Gerres oblongus, *Cuv. & Val.*
Chætodon vagabundus, *Linn.*
Sebanus, *Cuv. & Val.*
Layardi, *Blyth.*
xanthocephalus, *E. Bennett.*
guttatissimus, *E. Benn.*
Hæniochus macrolepidotus, *Linn.*
Scatophagus argus, *Cuv. & Val.*
Holacanthus xanthurus, *E. Benn.*
Platax Raynaldi, *Cuv. & Val.*
ocellatus, *Cuv. & Val.*
Ehrenbergii, *Cuv. & Val.*
Anabas *scandens, Dald.*
Helostoma.
Polyacanthus.
Ophicephalus.
Cybium guttatum, *Bloch.*
Chorinemus moadetta, *Ehren.*
Rhynchobdella ocellata, *Cuv. & Val.*
Mastocemblus Skinneri, *H. Smith.*
Caranx Heberi, *J. Benn.*
speciosus, *Forsk.*
Rhombus triocellatus, *Cuv. & Val.*
Equula dacer, *Cuv. & Val.*
filigera, *Cuv. & Val.*
Amphacanthus javus, *Linn.*
sutor, *Cuv. & Val.*
Acanthurus xanthurus, *Blyth.*
triostegus, *Bloch.*
Delisiani, *Cuv. & Val.*
lineatus, *Lacep.*
melas, *Cuv. & Val.*
Atherina duodecimalis, *Cuv. & Val.*
Blennius.
Salarias marmoratus, *Benn.*
alticus, *Cuv. & Val.*
Eleotris sexguttata, *Cuv. & Val.*
Cheironectes hispidus, *Cuv. & Val.*
Tautoga fasciata, *Bloch.*
Julis lunaris, *Linn.*
decussatus, *W. Benn.*
formosus, *Cuv. & Val.*
quadricolor, *Lesson.*
dorsalis, *Quoy & Gaim.*
aureomaculatus, *W. Benn.*
Ceilanicus, *E. Benn.*
Finlaysoni, *Cuv. & Val.*
purpureo-lineatus, *Cuv. & Val.*
Gomphosus fuscus, *Cuv. & Val.*
viridis, *W. Benn.*
Scarus pepo, *W. Benn.*
harid, *Forsk.*

Malacopterygii (abdominales).

Silurus.
Bagrus albilabris, *Cuv. & Val.*
Plotosus lineatus, *Cuv. & Val.*
Cyprinus.
Barbus tor, *Cuv. & Val.*
Nuria thermoicos, *Cuv. & Val.*
Leuciscus Zeylonicus, *E. Benn.*
thermalis, *Cuv. & Val.*
Cobitis thermalis, *Cuv. & Val.*
Hemirhamphus Reynaldi, *Cuv. & Val.*
Georgii, *Cuv. & Val.*
Exocœtus evolans, *Linn.*
Sardinella leiogaster, *Cuv. & Val.*
lineolata, *Cuv. & Val.*
Saurus myops, *Val.*

Malacopterygii (Sub-brachiati).

Pleuronectes, L.

Malacopterygii (Apoda).

Muræna.

Lophobranchi.

Syngnathus, L.

Plectognathii.

Tetraodon ocellatus, *W. Benn.*
argyropleura, *E. Bennett.*
argentatus, *Blyth.*
Balistes biaculeatus, *W. Benn.*
Triacanthus biaculeatus, *W. Benn.*

II. CARTILAGINOUS.

Squalus, L.
Pristis antiquorum, *Lath.*
cuspidatus, *Lath.*
pectinatus, *Lath.*
Raia, L.

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NOTE (A.)

INSTANCES OF FISHES FALLING FROM THE CLOUDS IN INDIA.

From the Bombay Times, 1856.

Dr. Buist, after enumerating cases in which fishes were said to have been thrown out from volcanoes in South America and precipitated from clouds in various parts of the world, adduces the following instances of similar occurrences in India. "In 1824," he says, "fishes fell at Meerut, on the men of Her Majesty's 14th Regiment, then out at drill, and were caught in numbers. In July, 1826, live fish were seen to fall on the grass at Moradabad during a storm. They were the common cyprinus, so prevalent in our Indian waters. On the 19th of February, 1830, at noon, a heavy fall of fish occurred at the Nokulhatty factory, in the Daccah zillah; depositions on the subject were obtained from nine different parties. The fish were all dead; most of them were large: some were fresh, others were rotten and mutilated. They were seen at first in the sky, like a flock of birds, descending rapidly to the ground; there was rain drizzling, but no storm. On the 16th and 17th of May, 1833, a fall of fish occurred in the zillah of Futtehpoor, about three miles north of the Jumna, after a violent storm of wind and rain. The fish were from a pound and a half to three pounds in weight, and of the same species as those found in the tanks in the neighbourhood. They were all dead and dry. A fall of fish occurred at Allahabad, during a storm in May, 1835; they were of the chowla species, and were found dead and dry after the storm had passed over the district. On the 20th of September, 1839, after a smart shower of rain, a quantity of live fish, about three inches in length and all of the same kind, fell at the Sunderbunds, about twenty miles south of Calcutta. On this occasion it was remarked that the fish did not fall here and there irregularly over the ground, but in a continuous straight line, not more than a span in breadth. The vast multitudes of fish, with which the low grounds round Bombay are covered, about a week or ten days after the first burst of the monsoon, appear to be derived from the adjoining pools or rivulets, and not to descend from the sky. They are not, so far as I know, found in the higher parts of the island. I have never seen them, though I have watched carefully, in casks

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collecting water from the roof of buildings, or heard of them on the decks or awnings of vessels in the harbour, where they must have appeared had they descended from the sky. One of the most remarkable phenomena of this kind occurred during a tremendous deluge of rain at Kattywar, on the 25th of July, 1850, when the ground around Rajkote was found literally covered with fish; some of them were found on the top of haystacks, where probably they had been drifted by the storm. In the course of twenty-four successive hours twenty-seven inches of rain fell, thirty-five fell in twenty-six hours, seven inches within one hour and a half, being the heaviest fall on record. At Poonah, on the 3rd of August, 1852, after a very heavy fall of rain, multitudes of fish were caught on the ground in the cantonments, full half a mile from the nearest stream. If showers of fish are to be explained on the assumption that they are carried up by squalls or violent winds, from rivers or spaces of water not far away from where they fall, it would be nothing wonderful were they seen to descend from the air during the furious squalls which occasionally occur in June.

NOTE (B).

MIGRATION OF FISHES OVER LAND.

Opinions of the Greeks and Romans.

It is an illustration of the eagerness with which, after the expedition of Alexander the Great, particulars connected with the natural history of India were sought for and arranged by the Greeks, that in the works both of ARISTOTLE and THEOPHRASTUS the facts are recorded of the fishes in the Indian rivers migrating in search of water, of their burying themselves in the mud on its failure, of their being dug out thence alive during the dry season, and of their spontaneous reappearance on the return of the rains. The earliest notice is in the treatise of ARISTOTLE *De Respiratione*, chap. ix., who mentions the strange discovery of living fish found beneath the surface of the soil, *τῶν ἰχθύων όι πολλοι ζῶσιν ἐν τῇ γῇ, ἀκινητίζοντες μεντοι, και εὑρισκονται ὀρυττομενοι*; and in his History of Animals he conjectures that in ponds periodically dried the ova of the fish so buried

become vivified at the change of the season.[1] HERODOTUS had previously hazarded a similar theory to account for the sudden appearance of fry in the Egyptian marshes on the rising of the Nile; but the cases are not parallel. THEOPHRASTUS, the friend and pupil of Aristotle, gave importance to the subject by devoting to it his essay Περὶ τῆς τῶν ἰχθύων εν ζηρῷ διαμονῆς, *De Piscibus in sicco degentibus.* In this, after adverting to the fish called *exocœtus*, from its habit of going on shore to sleep, απο τῆς κοιτῆς, he instances the small fish (ἰχθύδια), which leave the rivers of India to wander like frogs on the land; and likewise a species found near Babylon, which, when the Euphrates runs low, leave the dry channels in search of food, "moving themselves along by means of their fins and tail." He proceeds to state that at Heraclea Pontica there are places in which fish are dug out of the earth, ὀρυκτοι των ἰχθύων, and he accounts for their being found under such circumstances by the subsidence of the rivers, "when the water being evaporated the fish gradually descend beneath the soil in search of moisture; and the surface becoming hard they are preserved in the damp clay below it, in a state of torpor, but are capable of vigorous movements when disturbed. In this manner, too," Theophrastus adds, "the buried fish propagate, leaving behind them their spawn, which becomes vivified on the return of the waters to their accustomed bed." This work of Theophrastus became the great authority for all subsequent writers on this question. ATHENÆUS quotes it[2], and adds the further testimony of POLYBIUS, that in Gallia Narbonensis fish are similarly dug out of the ground.[3] STRABO repeats the story[4], and one and all the Greek naturalists received the statement as founded on reliable authority.

Not so the Romans. LIVY mentions it as one of the prodigies which were to be expiated on the approach of a rupture with Macedon, that "in Gallico agro qua induceretur aratrum sub glebis pisces emersisse,"[5] thus taking it out of the category of natural occurrences. POMPONIUS MELA, obliged to notice the matter in his account of Narbon Gaul, accompanies it with the intimation that although asserted by both Greek and Roman

[1] Lib. vi. ch. 15, 16, 17.
[2] Lib. viii. ch. 2.
[3] *Ib.* ch. 4.
[4] Lib. iv. and xii.
[5] Lib. xlii. ch. 4.

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authorities the story was either a delusion or a fraud.[1] JUVENAL has a sneer for the rustic—

"miranti sub aratro
Piscibus inventis."—*Sat.* xiii.—63.

And SENECA, whilst he quotes Theophrastus, adds ironically, that now we must go to fish with a *hatchet* instead of a hook; "non cum hamis, sed cum dolabra ire piscatum."[2] PLINY, who devotes the 35th chapter of his 9th book to this subject, uses the narrative of Theophrastus, but with obvious caution, and universally the Latin writers treated the story as a fable.

In later times the subject received more enlightened attention, and Beckmann, who in 1736 published his commentary on the collection Περὶ Θαυμασίων ἀκουσμάτων, ascribed to Aristotle, has given a list of the authorities about his own times,—Georgius Agricola, Gesner, Rondelet, Dalechamp, Bomare, and Gronovius, who not only gave credence to the assertions of Theophrastus, but adduced modern instances in corroboration of his Indian authorities.

NOTE (C.)

CEYLON FISHES.

(*Memorandum, by Professor Huxley.*)
See p. 205.

The large series of beautifully coloured drawings of the fishes of Ceylon, which has been submitted to my inspection, possesses an unusual value for several reasons.

The fishes, it appears, were all captured at Colombo, and even had those from other parts of Ceylon been added, the geographical area would not have been very extended. Nevertheless there are more than 600 drawings, and though it is possible that some of these represent varieties in different stages of growth of the same species, I have not been able to find definite evidence of the fact in any of those groups which I have particularly tested. If, however, these drawings represent *six hundred* distinct species of fish, they constitute, so far as I know, the largest collection of fish from one locality in existence.

[1] Lib. ii. ch. 5.
[2] *Nat. Quæst.* vii. 16.

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The number of known British fishes may be safely assumed to be less than 250, and Mr. Yarrell enumerates only 226, Dr. Cantor's valuable work on Malayan fishes enumerates not more than 238, while Dr. Russell has figured only 200 from Coromandel. Even the enormous area of the Chinese and Japaneses eas has as yet not yielded 800 species of fishes.

The large extent of the collection alone, then, renders it of great importance; but its value is immeasurably enhanced by two circumstances,—the *first*, that every drawing was made while the fish retained all that vividness of colouring which becomes lost so soon after its removal from its native element; *second*, that when the sketch was finished its subject was carefully labelled, preserved in spirits, and forwarded to England, so that at the present moment the original of every drawing can be subjected to anatomical examination, and compared with already named species.

Under these circumstances, I do not hesitate to say that the collection is one of the most valuable in existence, and might, if properly worked out, become a large and secure foundation for all future investigation into the ichthyology of the Indian Ocean.

It would be very hazardous to express an opinion as to the novelty or otherwise of the species and genera figured without the study of the specimens themselves, as the specific distinctions of fish are for the most part based upon character; the fin-rays, teeth, the operculum, &c., which can only be made out by close and careful examination of the object, and cannot be represented in ordinary drawings however accurate.

There are certain groups of fish, however, whose family traits are so marked as to render it almost impossible to mistake even their portraits, and hence I may venture, without fear of being far wrong, upon a few remarks as to the general features of the ichthyological fauna of Ceylon.

In our own seas rather less than a tenth of the species of fishes belong to the cod tribe. I have not found one represented in these drawings, nor do either Russell or Cantor mention any in the surrounding seas, and the result is in general harmony with the known laws of distribution of these most useful of fishes.

On the other hand, the mackerel family, including the tunnies, the bonitos, the dories, the horse-mackerels, &c., which form not more than one sixteenth of our own fish fauna, but which are

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known to increase their proportion in hot climates, appear in wonderful variety of form and colour, and constitute not less than one fifth of the whole of the species of Ceylon fish. In Russell's catalogue they form less than one fifth, in Cantor's less than one sixth.

Marine and other siluroid fishes, a group represented on the continent of Europe, but doubtfully, if at all, in this country, constitute one twentieth of the Ceylon fishes. In Russell's and Cantor's lists they form about one thirtieth of the whole.

The sharks and rays form about one seventh of our own fish fauna. They constitute about one tenth or one eleventh of Russell and Cantor's lists, while among these Ceylon drawings I find not more than twenty, or about one thirtieth of the whole, which can be referred to this group of fishes. It must be extremely interesting to know whether this circumstance is owing to accident, or to the local peculiarities of Colombo, or whether the fauna of Ceylon really is deficient in such fishes.

The like exceptional character is to be noticed in the proportion of the tribe of flat fishes, or *Pleuronectidæ*. Soles, turbots, and the like, form nearly one twelfth of our own fishes. Both Cantor and Russell give the flat fishes as making one twenty-second part of their collection, while in the whole 600 Ceylon drawings I can find but five *Pleuronectidæ*.

When this great collection has been carefully studied, I doubt not that many more interesting distributional facts will be evolved.

Since receiving this note from Professor Huxley, the drawings in question have been submitted to Dr. Gray, of the British Museum, and that eminent naturalist, after a careful analysis, has favoured me with the following memorandum of the fishes they exhibit, numerically contrasting them with those of China and Japan, so far as we are acquainted with the ichthyology of those seas:—

	Ceylon.	China and Japan.
Cartilaginea.		
Squali	12	15
Raiæ	19	20
Sturiones	0	1
Ostinopterygii.		
Plectognathi.		
tetraodontidæ	10	21
balistidæ	9	19

	Ceylon.	China and Japan.
Lophobranchii.		
syngnathidæ	2	2
pegasidæ	0	3
Ctenobranchii.		
lophidæ	1	3
Cyclopodi.		
echeneidæ	0	1
cyclopteridæ	0	1
gobidæ	7	85

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	Ceylon.	China and Japan.
Percini.		
callionymidæ	0	7
uranoscopidæ	0	7
cottidæ	0	13
triglidæ	11	37
polynemidæ	12	3
mullidæ	1	7
percidæ	26	12
berycidæ	0	5
sillaginidæ	3	1
sciænidæ	19	13
hæmulinidæ	6	12
serranidæ	31	38
theraponidæ	8	20
cirrhitidæ	0	2
mænidæ	37	25
sparidæ	16	17
acanthuridæ	14	6
chætodontidæ	25	21
fistularidæ	2	3
Periodopharyngi.		
mugilidæ	5	7
anabantidæ	6	15
pomacentridæ	10	11
Pharyngognathi.		
labridæ	16	35
scomberesocidæ	13	6
blenniidæ	3	8
Scomberina.		
zeidæ	0	2
sphyrænidæ	5	4
scomberidæ	118	62
xiphiidæ	0	1
cepolidæ	0	5
Heterosomata.		
platessoideæ	5	22
siluridæ	31	24
cyprinidæ	19	52
scopelinidæ	2	7
salmonidæ	0	1
clupeidæ	43	22
gadidæ	0	2
macruridæ	1	0
Apodes.		
anguillidæ	8	12
murænidæ	8	6
sphagebranchidæ	8	10

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CHAP. V.

CONCHOLOGY, ETC.

1. THE SHELLS OF CEYLON.

ALLUSION has been made elsewhere to the profusion and variety of shells which abound in the seas and inland waters of Ceylon[1], and to the habits of the Moormen, who monopolise the trade of collecting and arranging them in satin-wood cabinets for transmission to Europe. But, although naturalists have long been familiar with the marine testacea of this island, no successful attempt has yet been made to form a classified catalogue of the species; and I am indebted to the eminent conchologist, Mr. Sylvanus Hanley, for the list which accompanies this notice of those found in the island.

In drawing it up, Mr. Hanley observes that he found it a task of more difficulty than would at first be surmised, owing to the almost total absence of reliable data from which to construct it. Three sources were available: collections formed by resident naturalists, the contents of the well-known satin-wood boxes prepared at Trincomalie, and the laborious elimination of locality from the habitats ascribed to all the known species in the multitude of works on conchology in general.

But, unfortunately, the first resource proved fallacious. There is no large collection in this country composed exclusively of Ceylon shells. And the very few cabinets rich in the marine treasures of the island having been filled as much by purchase as by personal exertion, there is an absence of the requisite confidence that all professing to be

[1] See Vol. II. P. IX. ch. V.

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Singhalese have been actually captured in the island and its waters.

The cabinets arranged by the native dealers, though professing to contain the productions of Ceylon, include shells which have been obtained from other islands in the Indian seas; and books, probably from these very facts, are either obscure or deceptive. The old writers content themselves with assigning to any particular shell the too-comprehensive habitat of "the Indian Ocean," and seldom discriminate between a specimen from Ceylon and one from the Eastern Archipelago or Hindustan. In a very few instances, Ceylon has been indicated with precision as the habitat of particular shells, but even here the views of specific essentials adopted by modern conchologists, and the sub-divisions established in consequence, leave us in doubt for which of the described forms the collective locality should be retained.

Valuable notices of Ceylon shells are to be found in detached papers, in periodicals, and in the scientific surveys of exploring voyages. The authentic facts embodied in the monographs of Reeve, Kuster, Sowerby, and Kienn, have greatly enlarged the knowledge of the marine testacea; and the land and fresh-water mollusca have been similarly illustrated by the contributions of Benson and Layard in the *Annals of Natural History*.

The dredge has been used but only in a few insulated spots along the coasts of Ceylon; European explorers have been rare; and the natives, anxious only to secure the showy and saleable shells of the sea, have neglected the less attractive ones of the land and the lakes. Hence Mr. Hanley finds it necessary to premise that the list appended, although the result of infinite labour and research, is less satisfactory than could have been wished. "It is offered," he says, "with diffidence, not pretending to the merit of completeness as a shell-fauna of the island, but rather as a form, which the zeal of other collectors may hereafter elaborate and fill up."

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Looking at the little that has yet been done, compared with the vast and almost untried field which invites explorers, an assiduous collector may quadruple the species hitherto described. The minute shells especially may be said to be unknown; a vigilant examination of the corals and excrescences upon the spondyli and pearl-oysters would signally increase our knowledge of the Rissoæ, Chemnitziæ, and other perforating testacea, whilst the dredge from the deep water will astonish the amateur by the wholly new forms it can scarcely fail to display.

Dr. Kelaart, an indefatigable observer, has recently undertaken to investigate the Nudibranchiata, Inferobranchiata, and Tectibranchiata; and a recently-received report from him, in the Journal of the Ceylon Branch of the Royal Asiatic Society, in which he has described fifty-six species,—thirty-three belonging to the genus Doris alone—gives ample evidence of what may be expected from the researches of a naturalist of his acquirements and industry.

List of Ceylon Shells.

The arrangement here adopted is a modified Lamarckian one, very similar to that used by Reeve and Sowerby, and by MR. HANLEY, in his *Illustrated Catalogue of Recent Shells.*[1]

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[1] Below will be found a general reference to the Works or Papers in which are given descriptive notices of the shells contained in the following list; the names of the authors (in full or abbreviated) being, as usual, annexed to each species.

ADAMS, *Proceed. Zool. Soc.* 1853, 54, 56; *Thesaur. Conch.* ALBERS, *Zeitsch. Malakoz.* 1853. ANTON, *Wiegm. Arch. Nat.* 1837; *Verzeichn. Conch.* BECK in *Pfeiffer, Symbol. Helic.* BENSON, *Ann. Nat. Hist.* vii. 1851; xii. 1853; xviii. 1856. BLAINVILLE, *Dict. Sc. Nat.; Nouv. Ann. Mus. Hist. Nat.* i. BOLTEN, *Mus.* BORN, *Test. Mus. Cæs. Vind.* BRODERIP, *Zool. Journ.* i. iii. BRUGUIERE, *Ency. Méthod. Vers.* CARPENTER, *Proc. Zool. Soc.* 1856. CHEMNITZ, *Conch. Cab.* CHENU, *Illus. Conch.* DESHAYES, *Encyc. Méth. Vers.; Mag. Zool.* 1831; *Voy. Belanger; Edit. Lam. An. s. Vert.; Proceed. Zool. Soc.* 1853, 54, 55. DILLWYN, *Descr. Cat. Shells.* DOHRN, *Proc. Zool. Soc.* 1857, 58; *Malak. Blätter; Land and Fluviatile Shells of Ceylon.* DUCLOS, *Monog. of Oliva.* FABRICIUS, *in Pfeiffer Monog. Helic.; in Dohrn's MSS.* FÉRUSSAC, *Hist. Mollusques.* FORSKÄL, *Anim. Orient.* GMELIN,

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Aspergillum Javanum, *Brug.* Enc. Mét.
sparsum, *Sowerby*, Gen. Shells.[1]
clavatum, *Chenu*, Illust. Conch.
Teredo nucivorus, *Spengl.* Skr. Nat. Sels.[2]
Solen truncatus, *Wood*, Gen. Conch.
linearis, *Wood*, Gen. Conch.
cultellus, *Linn.* Syst. Nat.
radiatus, *Linn.* Syst. Nat.
Anatina subrostrata, *Lamarck*, Anim. s. Vert.
Anatinella Nicobarica, *Gm.* Syst. Nat.
Lutraria Egyptiaca, *Chemn.* Conch. Cab.
Blainvillea vitrea, *Chemn.* Conch. Cab.[3]
Scrobicularia angulata, *Chemn.* Conch. Cab.[4]
Mactra complanata, *Deshayes*, Proc. Zool. Soc.[5]
tumida, *Chemn.* Conch. Cab.
antiquata, *Reeve* (as of *Spengler*), Conch. Icon.
cygnea, *Chemn.* Conch. Cab.
Corbiculoides, *Deshayes*, Proc. Zool. Soc. 1854.
Mesodesma Layardi, *Deshayes*, Proc. Zool. Soc. 1854.
striata, *Chemn.* Conch. Cab.[6]
Crassatella rostrata, *Lam.* Anim. s. Vert.
sulcata, *Lam.* Anim. s. Vert.
Amphidesma duplicatum, *Sowerby*. Species Conch.
Pandora Ceylonica, *Sowerby*. Conch. Mis.
Galeomma Layardi, *Deshayes*, Proc. Zool. Soc. 1856.
Kellia peculiaris, *Adams*, Proc. Zool. Soc. 1856.
Petricola cultellus, *Deshayes*, Proc. Zool. Soc. 1853.
Sanguinolaria rosea, *Lam.* Anim. s. Vert.
Psammobia rostrata, *Lam.* Anim. s. Vert.
occidens, *Gm.* Systema Naturæ.
Skinneri, *Reeve*, Conch. Icon.[7]
Layardi, *Desh.* P. Z. Soc. 1854.
lunulata, *Desh.* P. Z. Soc. 1854.
amethystus, *Wood*, Gen. Conch.[8]
rugosa, *Lam.* Anim. s. Vert.[9]
Tellina virgata, *Linn.* Syst. Nat.[10]
rugosa, *Born.* Test. Mus. Cæs. Vind.
ostracea, *Lam.* Anim. s. Vert.
ala, *Hanley*, Thesaur. Conch. i.
inæqualis, *Hanley*, Thesaur. Conch. i.

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[1] A. dichotomum, *Chenu*.
[2] Fistulana gregata, *Lam.*
[3] Blainvillea, *Hupé*.
[4] Lutraria tellinoides, *Lam.*
[5] I have also seen M. hians of Philippi in a Ceylon collection.
[6] M. Taprobanensis, *Index Test. Suppl.*
[7] Psammotella Skinneri, *Reeve*.
[8] P. cærulescens, *Lam.*
[9] Sanguinolaria rugosa, *Lam.*
[10] T Striatula of Lamarck is also supposed to be indigenous to Ceylon.

Syst. Nat. Gray, *Proc. Zool. Soc.* 1834, 52; *Index Testaceologicus Suppl.*; *Spicilegia Zool.*; *Zool. Journ.* i.; *Zool. Beechey Voy.* Grateloup, *Act. Linn. Bordeaux*, xi. Guerin, *Rev. Zool.* 1847. Hanley, *Thesaur. Conch.* i.; *Recent Bivalves*; *Proc. Zool. Soc.* 1858. Hinds, *Zool. Voy. Sulphur*; *Proc. Zool. Soc.* Hutton, *Journ. As. Soc.* Karsten, *Mus. Lesk.* Kiener, *Coquilles Vivantes*. Krauss, *Sud-Afrik Mollusk.* Lamarck, *An. sans Vertéb.* Layard, *Proc. Zool. Soc.* 1854. Lea, *Proceed. Zool. Soc.* 1850. Linnæus, *Syst. Nat.* Martini, *Conch. Cab.* Mawe, *Introd. Linn. Conch.*; *Index. Test. Suppl.* Meuschen, in *Gronov. Zoophylac.* Menke, *Synop. Mollus.* Muller, *Hist. Verm. Terrest.* Petit, *Pro. Zool. Soc.* 1842. Pfeiffer, *Monog. Helic.*; *Monog. Pneumon.*; *Proceed. Zool. Soc.* 1852, 53, 54, 55, 56; *Zeitschr. Malacoz.* 1853. Philippi, *Zeitsch. Mal.* 1846, 47; *Abbild. Neuer Conch.* Potiez et Michaud, *Galeric Douai.* Rang, *Mag. Zool.* ser. i. p. 100. Récluz, *Proceed. Zool. Soc.* 1845; *Revue Zool. Cuv.* 1841; *Mag. Conch.* Reeve, *Conch. Icon.*; *Proc. Zool. Soc.* 1842, 52. Schumacher, *Syst.* Shuttleworth. Solander, in *Dillwyn's Desc. Cat. Shells.* Sowerby, *Genera Shells*; *Species Conch.*; *Conch. Misc.*; *Thesaur. Conch.*; *Conch. Illus.*; *Proc. Zool. Soc.*; *App. to Tankerville Cat.* Spengler, *Skrivt. Nat. Selsk. Kiobenhav.* 1792. Swainson, *Zool. Illust.* ser. ii. Templeton, *Ann. Nat. Hist.* 1858. Troschel, in *Pfeiffer, Mon. Pneum*; *Zeitschr. Malak.* 1847; *Wiegm. Arch. Nat.* 1837. Wood, *General Conch.*

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Layardi, *Deshayes*, P. Z. Soc. 1854.
callosa, *Deshayes*, P. Z. Soc. 1854.
rubra, *Deshayes*, P. Z. Soc. 1854.
abbreviata, *Deshayes*, P. Z. Soc. 1854.
foliacea, *Linn*. Systema Naturæ.
lingua-felis, *Linn*. Systema Naturæ.
vulsella, *Chemn*. Conch. Cab.[1]
Lucina interrupta, *Lam*. Anim. s. Vert.[2]
Layardi, *Deshayes*, Proc. Zool. Soc. 1855.
Donax scortum, *Linn*. Syst. Nat.
cuneata, *Linn*. Syst. Nat.
faba, *Chemn*. Conch. Cab.
spinosa, *Gm*. Syst. Nat.
paxillus, *Reeve*, Conch. Icon.
Cyrena Ceylanica, *Chemn*. Conch. Cab.
Tennentii, *Hanley*, P. Z. Soc. 1858.
Cytherea Erycina, *Linn*. Syst. Nat.[3]
meretrix, *Linn*. Syst. Nat.[4]
castanea, *Lam*. Anim. s. Vert.
castrensis, *Linn*. Syst. Nat.
casta, *Gm*. Syst. Nat.
costata, *Chemn*. Conch. Cab.
læta, *Gm*. Syst. Nat.
trimaculata, *Lam*. Anim. s. Vert.
Hebræa, *Lam*. Anim. s. Vert.
rugifera, *Lam*. Anim. s. Vert.
scripta, *Linn*. Syst. Nat.
gibbia, *Lam*. Anim. s. Vert.
Meroe, *Linn*. Syst. Nat.
testudinalis, *Lam*. Anim. s. Vert.
seminuda, *Anton*. Wiegm. Arch. Nat. 1837.
Cytherea seminuda, *Anton*.[5]
Venus reticulata, *Linn*. Syst. Nat.[6]
pinguis, *Chemn*. Conch. Cab.
recens, *Philippi*, Abbild. Neuer Conch.
thiara, *Dillw*. Descriptive Cat. Shells.
Malabarica, *Chemn*. Conch. Cab.
Bruguieri, *Hanley*, Recent Bivalves.
papalionacea, *Lam*. Anim. s. Vert.
Indica, *Sowerby*, Thesaur. Conch. ii.
inflata, *Deshayes*, Proc. Zool. Soc. 1853.[7]
Ceylonensis, *Sowerby*, Thes. Conch. ii.
literata, *Linn*. Systema Naturæ.
textrix, *Chemn*. Conch. Cab.[8]
Cardium unedo, *Linn*. Syst. Nat.
maculosum, *Wood*, Gen. Con.
leucostomum, *Born*, Test. Mus. Cæs. Vind.
rugosum, *Lam*. Anim. s. Vert.
biradiatum *Bruguiere*, Encyc. Méth. Vers.
attenuatum, *Sowerby*, Conch. Illust.
enode, *Sowerby*, Conch. Illust.
papyraceum, *Chemn*. Conch. Cab.
ringiculum, *Sowerby*, Conch. Illust.
subrugosum, *Sowerby*, Conch. Illust.
latum, *Born*, Test. Mus. Cæs. Vind.
Asiaticum, *Chemn*. Conch. Cab.
Cardita variegata, *Bruguiere*, Encyc. Méthod. Vers.
bicolor, *Lam*. Anim. s. Vert.
Arca rhombea, *Born*, Test. Mus.
vellicata, *Reeve*, Conch. Icon.
cruciata, *Philippi*, Ab. Neuer Conch.
decussata, *Reeve* (as of Sowerby), Conch. Icon.[9]
scapha, *Meuschen* in Gronov. Zoo.
Pectunculus nodosus, *Reeve*, Conch. Icon.
pectiniformis, *Lam*. Anim. s. Vert.
Nucula mitralis, *Hinds*, Zool. voy. Sul.
Layardi, *Adams*, Proc. Zool. Soc. 1856.
Nucula Mauritii (*Hanley* as of *Hinds*), Recent Bivalves.
Unio corrugatus, *Müller*, Hist. Verm. Ter.[10]
marginalis, *Lam*. Anim. s. Vert.
Lithodomus cinnamoneus, *Lam*. Anim. s. Vert.
Mytilus viridis, *Linn*. Syst. Nat.[11]
bilocularis, *Linn*. Syst. Nat.
Pinna inflata, *Chemn*. Conch. Cab.
cancellata, *Mawe*, Intr. Lin. Conch.
Malleus vulgaris, *Lam*. Anim. s. Vert.
albus, *Lam*. Anim. s. Vert.
Meleagrina margaritifera, *Linn*. Syst. Nat.
vexillum, *Reeve*, Conch. Icon.[12]
Avicula macroptera, *Reeve*, Conch. Icon.
Lima squamosa, *Lam*. Anim. s. Vert.
Pecten plica, *Linn*. Syst. Nat.
radula, *Linn*. Syst. Nat.
pleuronectes, *Linn*. Syst. Nat.
pallium, *Linn*. Syst. Nat.
senator, *Gm*. Syst. Nat.
histrionicus, *Gm*. Syst. Nat.
Indicus, *Deshayes*, Voyage Belanger.
Layardi, *Reeve*, Conch. Icon.
Spondylus Layardi, *Reeve*, Conch. Icon.
candidus, *Reeve* (as of *Lam*.) Conch. Icon.

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[1] T. rostrata, *Lam*.
[2] L. divaricata is found, also, in mixed Ceylon collections.
[3] C. dispar of Chemnitz is occasionally found in Ceylon collections.
[4] C. impudica, *Lam*.
[5] As Donax.
[6] V. corbis, *Lam*.
[7] As Tapes.
[8] V. textile, *Lam*.
[9] ? Arca Helblingii, *Chemn*.
[10] Mr. Cuming informs me that he has forwarded no less than six distinct *Uniones* from Ceylon to Isaac Lea of Philadelphia for determination or description.
[11] M. smaragdinus, *Chemn*.
[12] As Avicula.

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Ostrea hyotis, *Linn.* Syst. Nat.
glaucina, *Lam.* Anim. s. Vert.
Mytiloides, *Lam.* Anim. s. Vert.
cucullata? var. *Born.* Test. Mus. Vind.[1]
Vulsella Pholadiformis, *Reeve*, Conch. Icon. (immature).
Placuna placenta, *Linn.* Syst. Nat.
Lingula anatina, *Lam.* Anim. s. Vert.
Hyalæa tridentata, *For.* Anim. Orient.[2]
Chiton 2 species (*Layard*).
Patella Reynaudii, *Deshayes*, Voy. Be.
testudinaria, *Linn.* Syst. Nat.
Emarginula fissurata, *Chemn.* Conch. Cab.[3] *Lam.*
Calyptræa (Crucibulum) violascens, *Carpenter*, Proc. Zool. Soc. 1856.
Dentalium octogonum, *Lam.* Anim. s. Vert.
aprinum, *Linn.* Syst. Nat.
Bulla soluta, *Chemn.* Conch. Cab.[4]
vexillum, *Chemn.* Conch. Cab.
Bruguieri, *Adams*, Thes. Conch.
elongata, *Adams*, Thes. Conch.
ampulla, *Linn.* Syst. Nat.
Lamellaria (as Marsenia Indica, *Leach* in Brit. Mus.) allied to L. Mauritiana, if not it.
Vaginula maculata, *Templ.* An. Nat.
Limax, 2 sp.
Parmacella Tennentii, *Templ.*[5]
Vitrina irradians, *Pfeiffer*, Mon. Helic.
Edgariana, *Benson*, Ann. Nat. Hist. 1853, xii.
membranacea, *Benson*, Annal. Nat. Hist. 1853, xii.
Helix hæmastoma, *Linn.* Syst. Nat.
vittata, *Müller*, Vermium Terrestrium.
bistrialis, *Beck*, in Pfeiffer, Symbol. Helic.
Tranquebarica, *Fabricius*, in *Pfeiff.* Monog. Helic.
Juliana, *Gray*, Proc. Zool. Soc. 1834.
Waltoni, *Reeve*, Proc. Zool. Soc. 1842.
Skinneri, *Reeve*, Conch. Icon. vii.
corylus, *Reeve*, Conch. Icon. vii.
umbrina, (*Reeve*, as of *Pfeiff.*), Conch. Icon. vii.
fallaciosa, *Férussac*, Hist. Mollus.
Rivolii, *Deshayes*, Enc. Méth. Vers. ii.
Charpentieri, *Pfeiff.* Monog. Helic.
erronea, *Albers*, *Zeitschr.* Mal. 1853.
carneola, *Pfeiff.* Monog. Helic.
convexiuscula, *Pfeiff.* Monog. Helic.
ganoma, *Pfeiff.* Monog. Helic.
Chenui, *Pfeiff.* Monog. Helic.
semidecussata, *Pfeiff.* Monog. Helic.
phœnix, *Pfeiff.* Monog. Helic.
superba, *Pfeiff.* Monog. Helic.
Ceylanica, *Pfeiff.* Monog. Helic.
Gardneri, *Pfeiff.* Monog. Helic.
coriaria, *Pfeiff.* Monog. Helic.
Layardii, *Pfeiff.* Monog. Helic.
concavospira, *Pfeiff.* Monog. Helic.
novella, *Pfeiff.* Monog. Helic.
verrucula, *Pfeiff.* Monog. Helic.
hyphasma, *Pfeiff.* Monog. Helic.
Emiliana, *Pfeiff.* Monog. Helic.
Woodiana, *Pfeiff.* Monog. Helic.
partita, *Pfeiff.* Monog. Helic.
biciliata, *Pfeiff.* Monog. Helic.
Isabellina, *Pfeiff.* Proc. Zool. Soc. 18 .
trifilosa, *Pfeiff.* Proc. Zool. Soc. 1854.
politissima, *Pfeiff.* Proc. Zool. Soc. 1854.
Thwaitesii, *Pfeiff.* Proc. Zool. Soc. 1854.
nepos, *Pfeiff.* Proc. Zool. Soc. 1855.
subopaca, *Pfeiff.* Proc. Zool. Soc. 1853.
subconoidea, *Pfeiff.* Proc. Zool. Soc. 1854.
ceraria, *Benson*, Annals Nat. Hist. 1853 (xii.)
vilipensa, *Benson*, Ann. Nat. Hist. 1853 (xii.)
perfucata, *Benson*, Ann. Nat. Hist. 1853 (xii.)
puteolus, *Benson*, Ann. Nat. Hist. 1853 (xii.)
mononema, *Benson*, Ann. Nat. Hist. 1853 (xii.)
marcida, *Benson*, Ann. Nat. Hist. 1853 (xii.)
galerus, *Benson*, Ann. Nat. Hist. 1856 (xviii.)
albizonata, *Dohrn*, Proc. Zool. Soc. 1858.

[1] The specimens are not in a fitting state for positive determination. They are strong, extremely narrow, with the beak of the lower valve much produced, and the inner edge of the upper valve denticulated throughout. The muscular impressions are dusky brown.

[2] As Anomia.

[3] The fissurata of Humphreys and Dacosta, pl. 4.—E. rubra, *Lamarck*.

[4] B. Ceylanica, *Brug.*

[5] P. Tennentii. "Greyish brown, with longitudinal rows of rufous spots, forming interrupted bands along the sides. A singularly handsome species, having similar habits to *Limax*. Found in the valleys of the Kalany Ganga, near Ruanwellé."—*Templeton* MSS.

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Nietneri, *Dohrn*, MS.[1]
Grevillei, *Pfeiff.* Proc. Zool. Soc. 1856.
Streptaxis Layardi, *Pfeiff.* Mon. Helic.
Cingalensis, *Pfeiff.* Monog. Helic.
Pupa muscerda, *Benson*, Annals Nat. Hist. 1853 (xii.)
mimula, *Benson*, Ann. Nat. Hist. 1856, (xviii.)
Ceylanica, *Pfeiff.* Monog. Helic.
Bulimus trifasciatus, *Brug.* Encycl. Méth. Vers.
pullus, *Gray*, Proc. Zool. Soc. 1834.
gracilis, *Hutton*, Journ. Asiat. Soc. iii.
punctatus, *Anton*, Verzeichn. Conch.
Ceylanicus, *Pfeiff.* (? lævis, *Gray*, in Index Testaceologicus.)
adumbratus, *Pfeiff.* Monog. Helic.
intermedius, *Pfeiff.* Monog. Helic.
proletarius, *Pfeiff.* Monog. Helic.
albizonatus, *Reeve*, Conch. Icon.
mavortius, *Reeve*, Conch. Icon.
fuscoventris, *Benson*, Ann. Nat. Hist. 1856 (xviii.)
rufopictus, *Benson*, Ann. Nat. Hist. 1856 (xviii.)
panos, *Benson*, Ann. Nat. Hist. 1853, (xii.)
Achatina nitens, *Gray*, Spicilegia Zool.
inornata, *Pfeiff.* Monog. Helic.
capillacea, *Pfeiff.* Monog. Helic.
Ceylanica, *Pfeiff.* Monog. Helic.
Punctogallana, *Pfeiff.* Monog. Helic.
pachyčheila, *Benson.*
veruina, *Bens.* Ann. Nat. Hist. 1853 (xii.)
parabilis, *Bens.* Ann. Nat. Hist. 1856 (xviii.)
Succinea Ceylanica, *Pfeiff.* Monog. Helic.
Auricula Ceylanica, *Adams*, Proc. Zool. Soc. 1854.[2]
Ceylanica, *Petit*, Proc. Zool. Soc. 1842.[3]
Layardi, *Adams*, Proc. Zool. Soc. 1854.[4]
pellucens, *Menke*, Synopsis Moll.
Pythia Ceylanica, *Pfeiff.* Zeitschr. Malacoz. 1853.
ovata, *Pfeiff.* Proc. Zool. Soc. 1854.
Truncatella Ceylanica, *Pfeiff.* Proc. Zool. Soc. 1856.
Cyclostoma (*Cyclophorus*). Ceylanicum, *Sowerby*, Thes. Conch.
involvulum, *Müller*, Verm. Terrest.
Menkeanum, *Philippi*, Zeitsch. Mal. 1847.
punctatum, *Grateloup*, Act. Lin. Bordeaux, xi.
Loxostoma, *Pfeiff.* Monog. Pneumon.
alabastrum, *Pfeiff.* Monog. Pneumon.
Bairdii, *Pfeiff.* Monog. Pneumon.
Thwaitesii, *Pfeiff.* Monog. Pneumon.
annulatum. *Troschel*, in Pfeiff. Mon. Pneumon.
parapsis, *Bens.* Ann. Nat. Hist. 1853 (xii.)
parma, *Bens.* Ann. Nat. Hist. 1856 (xviii.)
cratera, *Bens.* Ann. Nat. Hist. 1856 (xviii.)
(*Leptopoma*) halophilum, *Benson*, Ann. Nat. Hist. (ser. 2. vii.) 1851.
orophilum, *Bens.* Annals Nat. Hist. (ser. 2. xi.)
apicatum, *Bens.* Ann. Nat. Hist. 1856 (xviii.)
conulus, *Pfeiff.* Proc. Zool. Soc. 1854.
flammeum, *Pfeiff.* Monog. Pneumon.
semiclausum, *Pfeiff.* Monog. Pneumon.
pœcilum. *Pfeiff.* Monog. Pneumon.
elatum, *Pfeiff.* Monog. Pneumon.
Cyclostoma (*Aulopoma*).
Itieri, *Guérin*, Rev. Zool. 1847.
helicinum, *Chemn.* Conch. Cab.
Hoffmeisteri, *Troschel*, Zeitschr. Mal. 1847.
grande, *Pfeiff.* Monog. Pneumon.
spheroideum, *Dohrn*, Malak. Blätter.
(?) gradatum, *Pfeiff.* Monog. Pneum.
Cyclostoma (*Pterocyclos*).
Cingalense, *Bens.* Ann. Nat. Hist. (ser. 2. xi.)
Troscheli, *Bens.* Ann. Nat. Hist. 1851.
Cumingii, *Pfeiff.* Monog. Pneumon.
bifrons, *Pfeiff.* Monog. Pneumon.
Cataulus Templemani, *Pfeiff.* Mon. Pneu.
eurytrema, *Pfeiff.* Proc. Zool. Soc. 1852.
marginatus, *Pfeiff.* Proc. Zool. Soc. 1853.
duplicatus, *Pfeiff.* Proc. Zool. Soc. 1854.
aureus, *Pfeiff.* Proc. Zool. Soc. 1855.
Layardi, *Gray*, Proc. Zool. Soc. 1852.
Austenianus, *Bens.* Ann. Nat. Hist. 1853 (xii.)
Thwaitesii, *Pfeiff.* Proc. Zool. Soc. 1852.
Cumingii, *Pfeiff.* Proc. Zool. Soc. 1856.
decorus, *Bens.* Ann. Nat. Hist. 1853.
hæmastoma, *Pfeiff.* Proc. Zool. Soc. 1856.
Planorbis Coromandelianus, *Fabric.* in *Dorhn's* MS.

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[1] Not far from bistrialis and Ceylanica. The manuscript species of Mr. Dohrn will shortly appear in his intended work upon the land and fluviatile shells of Ceylon.

[2] As Ellobium.

[3] As Melampus.

[4] As Ophicardelis.

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Stelzneri, *Dohrn*, Proc. Zool. Soc. 1858.
elegantulus, *Dohrn*, Proc. Zool. Soc. 1858.
Limnæa tigrina, *Dohrn*, Proc. Zool. Soc. 1858.
pinguis, *Dohrn*, Proc. Zool. Soc. 1858.
Melania tuberculata, *Müller*, Verm. Ter.[1]
spinulosa. *Lam.* Anim. s. Vert.
corrugata, *Lam.* Anim. s. Vert.
rudis, *Lea*, Proc. Zool. Soc. 1850.
acanthica, *Lea*, Proc. Zool. Soc. 1850.
Zeylanica, *Lea*, Proc. Zool. Soc. 1850.
confusa, *Dohrn*, Proc. Zool. Soc. 1858.
datura, *Dohrn*, Proc. Zool. Soc. 1858.
Layardi, *Dohrn*, Proc. Zool. Soc. 1858.
Paludomus abbreviatus, *Reeve*, Proc. Zool. Soc. 1852.
clavatus, *Reeve*, Proc. Zool. Soc. 1852.
dilatatus, *Reeve*, Proc. Zool. Soc. 1852.
globulosus, *Reeve*, Conch. Icon.
decussatus, *Reeve*, Proc. Zool. Soc. 1852.
nigricans, *Reeve*, Conch. Icon.
constrictus, *Reeve*, Proc. Zool. Soc. 1852.
bicinctus, *Reeve*, Proc. Zool. Soc. 1852.
phasianinus, *Reeve*, Proc. Zool. So. 1852.
lævis, *Layard*, Proc. Zool. Soc. 1854.
palustris, *Layard*, Proc. Zool. So. 1854.
fulguratus, *Dohrn*, Proc. Zool. So. 1857.
nasutus, *Dohrn*, Proc. Zool. Soc. 1857.
sphæricus, *Dohrn*, Proc. Zool. So. 1857.
solidus, *Dohrn*, Proc. Zool. Soc. 1857.
distinguendus, *Dohrn*, Proc. Zool. Soc. 1857.
Cumingianus, *Dohrn*, Proc. Zool. Soc. 1857.
dromedarius, *Dohrn*, Proc. Zool. Soc. 1857.
Skinneri, *Dohrn*, Proc. Zool. Soc. 1857.
Swainsoni, *Dohrn*, Proc. Zool. So. 1857.
nodulosus, *Dohrn*, Proc. Zool. So. 1857.
Paludomus (*Tanalia*).
loricatus, *Reeve*, Conch. Icon.
erinaceus, *Reeve*, Proc. Zool. Soc. 1852.
æreus, *Reeve*, Proc. Zool. Soc. 1852.
Layardi, *Reeve*, Proc. Zool. Soc. 1852.
undatus, *Reeve*, Conch. Icon.
Gardneri, *Reeve*, Conch. Icon.
Tennentii, *Reeve*, Conch. Icon.
Reevei, *Layard*, Proc. Zool. Soc. 1854.
violaceus, *Layard*, Proc. Zool. So. 1854.
similis, *Layard*, Proc. Zool. Soc. 1854.
funiculatus, *Layard*, Proc. Zool. Soc. 1854.
Paludomus (*Philopotamis*).
sulcatus, *Reeve*, Conch. Icon.
regalis, *Layard*, Proc. Zool. Soc. 1854.
Thwaitesii, *Layard*, Proc. Zool. Soc. 1854.
Pirena atra, *Linn.* Systema Naturæ.
Paludina melanostoma, *Bens.*
Ceylanica, *Dohrn*, Proc. Zool. So. 1857.
Bythinia stenothyroides, *Dohrn*, Proc. Zool. Soc. 1857.
modesta, *Dohrn*, MS.
inconspicua, *Dohrn*, Proc. Zool. Soc. 1857.
Ampullaria Layardi, *Reeve*, Conch. Icon.
mœsta, *Reeve*, Conch. Icon.
cinerea, *Reeve*, Conch. Icon.
Woodwardi, *Dohrn*, Proc. Zool. Soc. 1858.
Tischbeini, *Dohrn*, Proc. Zool. Soc. 1858.
carinata, *Swainson*, Zool. Illus. ser. 2.
paludinoides, Cat. *Cristofori & Jan.*[2]
Malabarica, *Philippi*, in Kust. ed. Chem.[2]
Luzonica, *Reeve*, Conch. Icon.[2]
sumatrensis, *Philippi*, in Kust. ed. Chem.[2]
Navicella eximia, Reeve, Conch. Icon.
reticulata, *Reeve*, Conch. Icon.
Livesayi, *Dohrn*, Proc. Zool. Soc. 1858.
squamata, *Dohrn*, Proc. Zool. So. 1858.
depressa, *Lam.* Anim. s. Vert.
Neritina crepidularia, *Lam.* Anim. s. Vert.
melanostoma, *Troschel*, Wiegm. Arch. Nat. 1837.
triserialis, *Sowerby*, Conch. Illustr.
Colombaria, *Recluz*, Proc. Zool. Soc. 1845.
Perottetiana, *Recluz*, Revue, Zool. Cuvier, 1841.
Ceylanensis, *Recluz*, Mag. Conch. 1851.
Layardi, *Reeve*, Conch. Icon.
rostrata, *Reeve*, Conch. Icon.
reticulata, *Sowerby*, Conch. Illustr.
Nerita plicata, *Linn.* Systema Naturæ.
costata, *Chemn.* Conch. Cab.
plexa, *Chemn.* Conch. Cab.[3]
Natica aurantia, *Lam.* Anim. s. Vert.
mammilla, *Linn.* Systema Naturæ.
picta, *Reeve* (*as of Recluz*), Conch. Icon.
arachnoidea, *Gm.* Systema Naturæ.
lineata, *Lam.* Anim. s. Vert.
adusta, *Chemn.* Conch. Cab. f. 1926-7, and *Karsten.*[4]
pellis-tigrina, *Karsten*, Mus. Lesk.[5]

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[1] M. fasciolata, *Olivier*.
[2] These four species are included on the authority of Mr. Dohrn.
[3] N. exuvia, *Lam.* not *Linn.*
[4] Conch. Cab. f. 1926-7, and N. melanostoma, *Lam.* in part.
[5] Chemn. Conch. Cab. 1892-3.

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didyma, *Bolten*, Mus.[1]
Ianthina prolongata, *Blainv.* Diction. Sciences Nat. xxiv.
communis, *Krauss* (as of *Lamarck*, in part) Sud-Afrik. Mollusk.
Sigaretus A species (possibly Javanicus.) is known to have been collected. I have not seen it.
Stomatella calliostoma, *Adams*, Thesaur. Conch.
Haliotis varia, *Linn.* Systema Naturæ.
striata, *Martini* (as of *Linn.*), Conch. Cab. i.
semistriata, *Reeve*, Conch. Icon.
Tornatella solidula, *Linn.* Systema. Nat.
Pyramidella maculosa, *Lam.* Anim. s. Vert.
Eulima Martini, *Adams*, Thes. Conch. ii.
Siliquaria muricata, *Born*, Test. Mus. Cæs. Vind.
Scalaria raricostata, *Lam.* Anim. s. Vert.
Delphinula laciniata, *Lam.* Anim. s Vert.
distorta, *Linn.* Syst. Nat.[2]
Solarium perdix, *Hinds.* Proc. Zool. Soc.
Layardi, *Adams*, Proc. Zool. Soc. 1854[3]
Rotella vestiaria, *Linn* Syst. Nat
Phorus pallidulus, *Reeve*, Conch. Icon. i.
Trochus elegantulus, *Gray*, Index Tes. Suppl.
Niloticus, *Linn.* Syst. Nat.
Monodonta labio, *Linn.* Syst. Nat.
canaliculata, *Lam.* Anim. s. Vert.
Turbo versicolor, *Gm.* Syst. Nat.
princeps, *Philippi.*[4]
Planaxis undulatus, *Lam.* Anim. s. Vert.[5]
Littorina angulifera, *Lam.* Anim. s. Vert.
melanostoma, *Gray*, Zool. Beech.[6]
Chemnitzia trilineata, *Adams*, Proc. Zool. Soc. 1853.
lirata, *Adams*, Proc. Zool. Soc. 1853.
Phasianella lineolata, *Gray*, Index Test. Suppl.
Turritella bacillum, *Kiener*, Coquilles Vivantes.
columnaris, *Kiener*, Coquilles Vivantes.
duplicata, *Linn.* Syst. Nat.
attenuata, *Reeve*, Syst. Nat.
Cerithium fluviatile, *Potiez & Michaud*, Galerie Douai.
Layardi (Cerithidea), *Adams*, Proc. Zool Soc. 1854.
aluco, *Linn.* Syst. Nat.
asperum, *Linn.* Syst. Nat.
telescopium, *Linn.* Syst. Nat.
palustre obeliscus, *Linn.* Syst. Nat.
fasciatum, *Brug.* Encycl. Méth. Vers.
rubus, *Sowerby* (as of *Martyn*), Thes. Conch. ii.
Sowerbyi, *Kiener*, Coquilles Vivantes, (teste Sir E. Tennent).
Pleurotoma Indica, *Deshayes*, Voyage Belanger.
virgo, *Lam.* Anim. s. Vert.
Turbinella pyrum, *Linn.* Syst. Nat.
rapa, *Lam* Anim. s. Vert. (the Chank.)
cornigera, *Lam.* Anim. s. Vert.
spirillus, *Linn.* Syst. Nat.
Cancellaria trigonostoma, *Lam.* Anim. s. Vert.[7]
scalata, *Sowerby*, Thesaur. Conch.
articularis, *Sowerby*, Thesaur. Conch.
Littoriniformis, *Sowerby*, Thes. Conch.
contabulata, *Sowerby*, Thes. Conch.
Fasciolaria filamentosa, *Lam.* Anim. s. Vert.
trapezium, *Linn.* Syst. Nat.
Fusus longissimus, *Lam.* Anim. s. Vert.
colus, *Linn.* Mus. Lud. Ulricæ.
toreuma, *Deshayes*, (as Murex t. *Martyn*), ed. *Lam.* Anim. s. Vert.
laticostatus *Deshayes*, Magas. Zool. 1831.
Blosvillei, *Deshayes*, Encycl. Méthod. Vers., ii.
Pyrula rapa, *Linn.* Syst. Nat.[8]
citrina, *Lam.* Anim. s. Vert
pugilina, *Born*, Test. Mus. Vind.[9]
ficus, *Linn.* Syst. Nat.
ficoides, *Lam.* Anim. s. Vert.
Ranella crumena, *Lam.* Anim. s. Vert.
spinosa, *Lam.* Anim. s. Vert.
rana, *Linn.* Syst. Nat.[10]
margaritula, *Deshayes*, Voy. Belanger.
Murex haustellum, *Linn.* Syst. Nat.
adustus, *Lam.* Anim. s. Vert.
microphyllus, *Lam.* Anim. s. Vert.
anguliferus, *Lam.* Anim. s. Vert.
palmarosæ, *Lam.* Anim. s. Vert.
ternispina, *Kiener* (as of *Lam.*), Coquilles Vivantes.
tenuispina, *Lam.* Anim. s. Vert.
ferrugo, *Mawe*, Index. Test. Suppl.[11]
Recveanus, *Shuttleworth* (teste *Cuming*).

[1] N glaucina, *Lam.* not *Linn*
[2] Not of *Lamarck*. D. atrata, *Reeve*.
[3] Philippia L.
[4] Zeit. Mal 1846 for T. argyrostoma, *Lam.* not *Linn.*
[5] Buccinum pyramidatum, *Gm.* in part: B sulcatum, var. C. of *Brug*.
[6] Teste Cuming.
[7] As Delphinula t.
[8] P. papyracea, *Lam.* In mixed collections I have seen the Chinese P. bezoar of *Lamarck* as from Ceylon.
[9] P. vespertilio, *Gm.*
[10] R. albivaricosa, *Reeve*.
[11] M. anguliferus var. *Lam.*

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Triton anus, *Linn.* Syst. Nat.[1]
mulus, *Dillwyn*, Descript. Cat. Shells.
retusus, *Lam.* Anim. s. Vert.
pyrum, *Linn.* Syst. Nat.
clavator, *Chemn.* Conch. Cab.
Ceylonensis, *Sowerby*, Proc. Zool. Soc.
lotorium, *Lam.* (not *Linn.*) Anim. s. Vert.
lampas, *Linn.* Syst. Nat.
Pterocera lambis, *Linn.* Syst. Nat.
millepeda, *Linn.* Syst. Nat.
Strombus canarium, *Linn.* Syst. Nat.[2]
succinctus, *Linn.* Syst. Nat.
fasciatus, *Born*, Test. Mus. Cæs. Vind.
Sibbaldii, *Sowerby*, Thesaur. Conch. i.
lentiginosus, *Linn.* Syst. Nat.
marginatus, *Linn.* Syst. Nat.
Lamarckii, *Sowerby*, Thesaur. Conch.
Cassis glauca, *Linn.* Syst. Nat.[3]
canaliculata, *Lam.* Anim. s. Vert.
Zeylanica, *Lam.* Anim. s. Vert.
areola, *Linn.* Syst. Nat.
Ricinula albolabris, *Blainv.* Nouv. Ann. Mus H. N. i.[4]
horrida, *Lam.* Anim. s. Vert.
morus, *Lam.* Anim. s. Vert.
Purpura fiscella, *Chemn.* Conch. Cab.
Persica, *Linn.* Syst. Nat.
hystrix, *Lam.* (not *Linn.*) Anim. s. Vert.
granatina, *Deshayes*, Voy. Belanger.
mancinella, *Lam.* (as of *Linn.*) Anim. s. Vert.
bufo, *Lam.* Anim. s. Vert.
carinifera, *Lam.* Anim. s. Vert.
Harpa conoidalis, *Lam.* Anim. s. Vert.
minor, *Lam.* Anim. s. Vert.
Dolium pomum, *Linn.* Syst. Nat.
olearium, *Linn.* Syst. Nat.
perdix, *Linn.* Syst. Nat.
maculatum, *Lam.* Anim. s. Vert.
Nassa ornata, *Kiener*, Coq. Vivantes.[5]
verrucosa, *Brug.* Encycl. Méth. Vers.
crenulata, *Brug.* Encycl. Méth. Vers.
olivacea, *Brug.* Encycl. Méth. Vers.
glans, *Linn.* Syst. Nat.
arcularia, *Linn.* Syst. Nat.
papillosa, *Linn.* Syst. Nat.
Phos virgatus, *Hinds*, Zool. Sul. Moll.
retecosus, *Hinds*, Zool. Sulphur, Moll.
senticosus, *Linn.* Syst. Nat.
Buccinum melanostoma, *Sowerby*, App. to Tankerv. Cat.
erythrostoma, *Reeve*, Conch. Icon.
Proteus, *Reeve*, Conch. Icon.
rubiginosum, *Reeve*, Conch. Icon.
Eburna spirata, *Linn.* Syst. Nat.[6]
canaliculata, *Schumacher*, Sys. Anim. s. Vert.[7]
Ceylanica, *Bruguiere*, En. Méth. Vers.
Bullia vittata, *Linn.* Syst. Nat.
lineolata, *Sowerby*, Tankerv. Cat.[8]
Melanoides, *Deshayes*, Voy. Belanger.
Terebra chlorata, *Lam.* Anim. s. Vert.
muscaria, *Lam.* Anim. s. Vert.
lævigata, *Gray*, Proc. Zool. Soc. 1834.
maculata, *Linn.* Syst. Nat.
subulata, *Linn.* Syst. Nat.
concinna, *Deshayes*, ed. *Lam.* Anim. s. Vert.
myurus, *Lam.* Anim. s. Vert.
tigrina, *Gm.* Syst. Nat.
Cerithina, *Lam.* Anim. s. Vert.
Columbella flavida, *Lam.* Anim. s. Vert.
fulgurans, *Lam.* Anim. s. Vert.
mendicaria, *Linn.* Syst. Nat.
scripta, *Lam.* Anim. s. Vert. (teste *Jay*).
Mitra episcopalis, *Dillwyn*, Descript. Cat. Shells.
cardinalis, *Lam.* Anim. s. Vert.
crebrilirata, *Reeve*, Conch. Icon.
punctostriata, *Adams*, Proc. Zool. Soc. 1854.
insculpta, *Adams*, Proc. Zool. Soc. 1854.
Layard, *Adams*, Proc. Zool. Soc. 1854.[9]
Voluta vexillum, *Chemn.* Conch. Cab.
Lapponica, *Linn.* Syst. Nat.
Melo Indicus, *Gm.* Syst. Nat.
Marginella Sarda, *Kiener*, Coq. Vivantes.
Ovulum ovum, *Linn.* Syst. Nat.
verrucosum, *Linn.* Syst. Nat.
pudicum, *Adams*, Proc. Zool. Soc. 1854.
Cypræa Argus, *Linn.* Syst. Nat.
Arabica, *Linn.* Syst Nat.
Mauritiana, *Linn.* Syst. Nat.
hirundo, *Linn.* Syst. Nat.
Lynx, *Linn.* Syst. Nat.
asellus, *Linn.* Syst. Nat.
erosa, *Linn.* Syst. Nat.
vitellus, *Linn.* Syst. Nat.
stolida, *Linn.* Syst Nat.

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[1] T. cynocephalus of *Lamarck* is also met with in Ceylon collections.

[2] S incisus of the Index Testaceologicus (urceus, var. *Sow.* Thesaur.) is found in mixed Ceylon collections.

[3] C plicaria of *Lamarck*, and C. coronulata of *Sowerby*, are also said to be found in Ceylon.

[4] As Purpura.

[5] N. suturalis, *Reeve* (as of *Lam.*), is met with in mixed Ceylon collections.

[6] E. areolata, *Lam.*

[7] E. spirata, *Lam.* not *Linn.*

[8] B. Belangeri, *Kiener.*

[9] As Turricula L.

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mappa, *Linn.* Syst. Nat.
helvola, *Linn.* Syst. Nat.
errones, *Linn.* Syst. Nat.
cribraria, *Linn.* Syst. Nat.
globulus, *Linn.* Syst. Nat.
clandestina, *Linn.* Syst. Nat.
ocellata, *Linn.* Syst. Nat.
caurica, *Linn.* Syst. Nat.
tabescens, *Solander*, in Dillwyn Descr. Cat. Shells.
gangrenosa, *Solander*, in Dillwyn Desc. Cat. Shells.
interrupta, *Gray*, Zool. Journ. i.
lentiginosa, *Gray*, Zool. Journ. i.
pyriformis, *Gray*, Zool. Journ. i.
nivosa, *Broderip*, Zool. Journ. iii.
poraria, *Linn.* Syst. Nat.
testudinaria, *Linn.* Syst. Nat.
Terebellum subulatum, *Lam.* Anim. s. Vert.
Ancillaria glabrata, *Linn.* Syst. Nat.
candida, *Lam.* Anim. s. Vert.
Oliva Maura, *Lam.* Anim. s. Vert.
erythrostoma, *Lam.* Anim. s. Vert.
gibbosa, *Born*, Test. Mus. Cæs.[1]
nebulosa, *Lam.* Anim. s. Vert.
Macleayana, *Duclos*, Monograph of Oliva.
episcopalis, *Lam.* Anim. s. Vert.
elegans, *Lam.* Anim. s. Vert.
ispidula, *Linn.* Syst. Nat. (partly).[2]
Zeilanica, *Lam.* Anim. s. Vert.
undata, *Lam.* Anim. s. Vert.
irisans, *Lam.* Anim. s. Vert. (teste *Duclos*).
Conus miles, *Linn.* Syst. Nat.
generalis, *Linn.* Syst. Nat.
betulinus, *Linn.* Syst. Nat.
stercus-muscarum, *Linn.* Syst. Nat.
Hebræus, *Linn.* Syst. Nat.
virgo, *Linn.* Syst. Nat.
geographicus, *Linn.* Syst. Nat.
aulicus, *Linn.* Syst. Nat.
figulinus, *Linn.* Syst. Nat.
striatus, *Linn.* Syst. Nat.
senator, *Linn.* Syst. Nat.[3]
literatus, *Linn.* Syst. Nat.
imperialis, *Linn.* Syst. Nat.
textile, *Linn.* Syst. Nat.
terebra, *Born*, Test. Mus. Cæs. Vind.
tessellatus, *Born*, Test. Mus. Cæs. Vind.
Augur, *Bruguiere*, Encycl. Méth. Vers.
obesus, *Bruguiere*, Encycl. Méth. Vers.
araneosus, *Brug.* Encycl. Méth. Vers.
gubernator, *Brug.* Encycl. Méth. Vers.
monile, *Brug.* Encycl. Méth. Vers.
nimbosus, *Brug.* Encycl. Méth. Vers.
eburneus, *Brug.* Encycl. Méth. Vers.
vitulinus, *Brug.* Encycl. Méth. Vers.
quercinus, *Brug.* Encycl. Méth. Vers.
lividus, *Brug.* Encycl. Méth. Vers.
Omaria, *Brug.* Encycl. Méth. Vers.
Maldivus, *Brug.* Encycl. Méth. Vers.
nocturnus, *Brug.* Encycl. Méth Vers.
Ceylonensis, *Brug.* Encycl. Méth. Vers.
arenatus, *Brug.* Encycl. Méth. Vers.
Nicobaricus, *Brug.* Encycl. Méth. Vers.
glans, *Brug.* Encycl. Méth. Vers.
Amadis, *Chemn.* Conch. Cab.
punctatus, *Chemn.* Conch. Cab.
minimus, *Reeve* (as of *Linn.*), Conch. Icon.
terminus, *Lam.* Anim. s. Vert.
lineatus, *Chemn.* Conch. Cab.
episcopus, *Brug.* Encycl. Méth. Vers.
verriculum, *Reeve*, Conch. Cab.
zonatus, *Brug.* Encycl. Méth. Vers.
rattus, *Brug.* Encycl. Méth. Vers. (teste *Chemn.*)
pertusus, *Brug.* Encycl. Méth. Vers.
Nussatella, *Linn.* Syst. Nat.
lithoglyphus, *Brug.* En. Méth. Vers.[3]
tulipa, *Linn.* Syst. Nat.
Ammiralis, *var. Linn.* teste *Brug.*
Spirula Peronii, *Lam.* Anim. s. Vert.
Sepia Hieredda, *Rang.* Magas. Zool. ser. i. p. 100.
Sepioteuthis, *Sp.*
Loligo, *Sp.*

A conclusion not unworthy of observation may be deduced from this catalogue; namely, that Ceylon was the unknown, and hence unacknowledged, source of almost every extra-European shell which has been described by Linnæus without a recorded habitat. This fact gives to Ceylon specimens an importance which can only be appreciated by collectors and the students of Mollusca.

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[1] O. utriculus, *Dillwyn.*
[2] C. planorbis, *Born*; C. vulpinus, *Lam.*
[3] Conus ermineus, *Born*, in part.

2. RADIATA.

The eastern seas are profusely stocked with radiated animals, but it is to be regretted that they have as yet received but little attention from English naturalists. Dr. Kelaart has, however, devoted himself to the investigation of some of the Singhalese species, and has given the fruits of his discoveries in the Journal of the Ceylon Branch of the Asiatic Society for 1856–8. Our information respecting the radiata on the confines of the island is, therefore, very scanty; with the exception of the genera[1] examined by him. Hence the notice of this extensive class of animals must be limited to indicating a few of those which exhibit striking peculiarities, or which admit of the most common observation.

Star Fish.—Very large species of *Ophiuridæ* are to be met with at Trincomalie, crawling busily about, and insinuating their long serpentine arms into the irregularities and perforations in the rocks. To these they attach themselves with such a firm grasp, especially when they perceive that they have attracted attention, that it is next to impossible to procure unmutilated specimens without previously depriving them of life, or at least modifying their muscular tenacity. The upper surface is of a dark purple colour, and coarsely spined; the arms of the largest specimens are more than a foot in length, and very fragile.

The star fishes, with immovable rays[2], are not by any means rare; many kinds are brought up in the nets, or may be extracted from the stomachs of the larger market fish. One very large species[3], figured by Joinville in the manuscript volume in the library at the India House, is not uncommon; it has thick arms, from

[1] Actinia, 9 sp.; Anthea, 4 sp.; Actinodendron, 3 sp.; Dioscosoma, 1 sp.; Peechea, 1 sp.; Zoanthura, 1 sp.

[2] *Asterias*, Linn.

[3] *Pentaceros?*

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which and the disc numerous large fleshy cirrhi of a bright crimson colour project downwards, giving the creature a remarkable aspect. No description of it, so far as I am aware, has appeared in any systematic work on zoology.

Sea Slugs. — There are a few species of *Holothuriæ*, of which the trepang is the best known example. It is largely collected in the Gulf of Manaar, and dried in the sun to prepare it for export to China. A good description and figure of it are still desiderata.

Parasitic Worms. — Of the entozoa, the *Filaria medinensis*, or guinea worm, which burrows in the cellular tissue under the skin, is well known in the north of the island, but rarely found in the damper districts of the south and west. In Ceylon, as elsewhere, the natives attribute its occurrence to drinking the waters of particular wells; but this belief is inconsistent with the fact that its lodgment in the human body is almost always effected just above the ankle, which shows that the minute parasites are transferred to the skin of the leg from the moist vegetation bordering the footpaths leading to wells. The creatures are at this period minute, and the process of insinuation is painless and imperceptible. It is only when they attain to considerable size, a foot or more in length, that the operation of extracting them is resorted to, when exercise may have given rise to inconvenience and inflammation.

Planaria. — In the journal above alluded to, Dr. Kelaart has given descriptions of fifteen species of planaria, and four of a new genus, instituted by him for the reception of those differing from the normal kinds by some peculiarities which they exhibit in common. At Point Pedro, Mr. Edgar Layard met with one on the bark of trees, after heavy rain, which would appear to belong to the subgenus *geoplana*.[1]

[1] "A curious species, which is of a light brown above, white underneath; very broad and thin, and has a peculiarly shaped tail, half-moon-shaped, in fact, like a grocer's cheese knife."

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Acalephæ.—Acalephæ[1] are plentiful, so much so, indeed, that they occasionally tempt the larger cetacea into the Gulf of Manaar. In the calmer months of the year, when the sea is glassy, and for hours together undisturbed by a ripple, the minute descriptions are rendered perceptible by their beautiful prismatic tinting. So great is their transparency that they are only to be distinguished from the water by the return of the reflected light that glances from their delicate and polished surfaces. Less frequently they are traced by the faint hues of their tiny peduncles, arms, or tentaculæ; and it has been well observed that they often give the seas in which they abound the appearance of being crowded with flakes of half-melted snow. The larger kinds, when undisturbed in their native haunts, attain to considerable size. A faintly blue medusa, nearly a foot across, may be seen in the Gulf of Manaar, where, no doubt, others of still larger growth are to be found.

The remaining orders, including the corals, madrepores, and other polypi, have yet to find a naturalist to undertake their investigation, but in all probability the species are not very numerous.

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[1] Jellyfish.

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CHAP. VI.

INSECTS.

Owing to the combination of heat, moisture, and vegetation, the myriads of insects in Ceylon form one of the characteristic features of the island. In the solitude of the forests there is a perpetual music from their soothing and melodious hum, which frequently swells to a startling sound as the cicada trills his sonorous drum on the sunny bark of some tall tree. At morning the dew hangs in diamond drops on the threads and gossamer which the spiders suspend across every pathway; and above the pools dragon flies, of more than metallic lustre, flash in the early sunbeams. The earth teems with countless ants, which emerge from beneath its surface, or make their devious highways to ascend to their nests in the branches. Lustrous beetles, with their golden elytra, bask on the leaves, whilst minuter species dash through the air in circles, which the ear can follow by the booming of their tiny wings. Butterflies of large size and gorgeous colouring flutter over the endless expanse of flowers, and frequently the extraordinary sight presents itself of flights of these delicate creatures, generally of a white or pale yellow hue, apparently miles in breadth, and of such prodigious extension as to occupy hours, and even days, uninterruptedly in their passage—whence coming no one knows; whither going no one can tell.[1] As day

[1] The butterflies I have seen in these wonderful migrations in Ceylon were mostly *Callidryas Hilariæ*, *C. Alcmeone*, and *C. Pyranthe*, with straggling individuals of the genus *Euplœa*, *E. Coras*, and *E. Prothoe*; Their passage took place in April and May, generally in a north-easterly direction.

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declines, the moths issue from their retreats, the crickets add their shrill voices to swell the din; and when darkness descends, the eye is charmed with the millions of emerald lamps lighted up by the fire-flies amidst the surrounding gloom.

No attempt has as yet been made to describe the class systematically, much less to enumerate the prodigious number of species which abound in every locality. Occasional observers have, from time to time, contributed notices of particular families to the Scientific Associations of Europe, but their papers remain undigested, and the time has not yet arrived for the preparation of an Entomology of the island.

What Darwin remarks of the Coleoptera of Brazil is nearly as applicable to the same order of insects in Ceylon: "The number of minute and obscurely coloured beetles is exceedingly great; the cabinets of Europe can as yet, with partial exceptions, boast only of the larger species from tropical climates, and it is sufficient to disturb the composure of an entomologist to look forward to the future dimensions of a catalogue with any pretensions to completeness."[1]

M. Neitner, a German entomologist, who has spent some years in Ceylon, has recently published, in one of the local periodicals, a series of papers on the Coleoptera of the island, in which every species introduced is stated to be previously undescribed.[2]

Coleoptera.—*Buprestidæ; Golden Beetles.*—In the morning the herbaceous plants, especially on the eastern side of the island, are studded with those gorgeous beetles whose golden elytra[3] are used to enrich the embroidery of the Indian zenana, whilst the lustrous joints of the legs are strung on silken threads, and form necklaces and bracelets of singular brilliancy.

These exquisite colours are not confined to one order,

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[1] *Nat. Journal*, p. 39.

[2] Republished in the *Ann. Nat. Hist.*

[3] *Sternocera Chrysis; S. sternicornis.*

and some of the Elateridæ [4] and Lamellicorns exhibit hues of green and blue, that rival the deepest tints of the emerald and sapphire.

Scavenger Beetles.—Scavenger beetles [2] are to be seen wherever the presence of putrescent and offensive matter affords opportunity for the display of their repulsive but most curious instincts; fastening on it with eagerness, severing it into lumps proportionate to their strength, and rolling it along in search of some place sufficiently soft in which to bury it, after having deposited their eggs in the centre. I had frequent opportunities, especially in traversing the sandy jungles in the level plains to the north of the island, of observing the unfailing appearance of these creatures instantly on the dropping of horse dung, or any other substance suitable for their purpose; although not one was visible but a moment before. Their approach through the air is announced by a loud and joyous booming sound, as they dash in rapid circles in search of the desired object, led by their sense of smell, but evidently little assisted by the eye in shaping their course towards it. In these excursions they exhibit a strength of wing and sustained power of flight, such as is possessed by no other class of beetles with which I am acquainted, but which is obviously indispensable for the due performance of the useful functions they discharge.

The Coco-nut Beetle.—In the luxuriant forests of Ceylon, the extensive family of Longicorns live in destructive abundance. Their ravages are painfully familiar to the coco-nut planters.[3] The larva of one species

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[1] Of the family of *Elateridæ*, one of the finest is a Singhalese species, the *Compsosternus Templetonii*, of an exquisite golden green colour, with blue reflections (desciibed and figured by Mr. WESTWOOD in his *Cabinet of Oriental Entomology*, pl. 35, f. 1). In the same work is figured another species of large size, also from Ceylon, this is the *Alaus sordidus*.—WESTWOOD, l. c. pl. 35, f. 9.

[2] *Ateuchus sacer; Copris sagax; C. capucinus*, &c. &c.

[3] There is a paper in the *Journ. of the Asiat. Society of Ceylon*, May, 1845, by Mr. CAPPER, on the ravages perpetrated by these beetles. The writer had recently passed through

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of large dimensions, *Batocera rubus*[1], called by the Singhalese "*Cooroominya*," makes its way into the stems of the younger trees, and after perforating them in all directions, it forms a cocoon of the gnawed wood and sawdust, in which it reposes during its sleep as a pupa, till the arrival of the period when it emerges as a perfect beetle. Notwithstanding the repulsive aspect of the large pulpy larvæ of these beetles, they are esteemed a luxury by the Malabar coolies, who so far avail themselves of the privilege accorded by the Levitical law, which permitted the Hebrews to eat "the beetle after his kind."[2]

Tortoise Beetles.—There is one family of insects, the members of which cannot fail to strike the traveller by their singular beauty, the *Cassidiadæ* or tortoise beetles, in which the outer shell overlaps the body, and the limbs are susceptible of being drawn entirely within it. The rim is frequently of a different tint from the centre, and one species which I have seen is quite startling from the brilliancy of its colouring, which gives it the appearance of a ruby enclosed in a frame of pearl; but this wonderful effect disappears immediately on the death of the insect.[3]

Orthoptera. *The Soothsayer.*—But the admiration of colours is still less exciting than the astonishment created by the forms in which some of the insect families present themselves, especially the "soothsayers" (*Mantidæ*) and "walking leaves." The latter[4], exhibiting the most cunning of all nature's devices for the preservation of her creatures, are found in the jungle in all

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several coco-nut plantations, "varying in extent from 20 to 150 acres, and about two to three years old; and in these he did not discover a single young tree untouched by the cooroominya."—P. 49.

[1] Called also B. *octo-maculatus*; *Lamia rubus*, Fabr.

[2] Leviticus, xi. 22.

[3] One species, the *Cassida farinosa*, frequent in the jungle which surrounded my official residence at Kandy, is covered profusely with a snow-white powder, arranged in delicate filaments, which it moves without dispersing; but when dead they fall rapidly to dust.

[4] *Phyllium siccifolium.*

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varieties of hue, from the pale yellow of an opening bud to the rich green of the full-blown leaf, and the withered tint of decaying foliage. And so perfect is the imitation in structure and articulation, that these amazing insects when at rest are almost indistinguishable from the verdure around them: not the wings alone being modelled to resemble ribbed and fibrous follicles, but every joint of the legs being expanded into a broad plait like a half-opened leaflet.

It rests on its abdomen, the legs serving to drag it slowly along, and thus the flatness of its attitude serves still further to add to the appearance of a leaf. One of the most marvellous incidents connected with its organisation was exhibited by one which I kept under a glass shade on my table; it laid a quantity of eggs, that, in colour and shape, were not to be discerned from *seeds*. They were brown and pentangular, with a short stem, and slightly punctured at the intersections.

EGGS OF THE LEAF INSECT.

The "soothsayer," on the other hand, (*Mantis superstitiosa*, Fab.[1]), little justifies by its propensities the appearance of gentleness, and the attitudes of sanctity, which have obtained for it its title of the praying mantis. Its habits are carnivorous, and degenerate into cannibalism, as its preys on the weaker individuals of its own species. Two which I enclosed in a box were both found dead a few hours after, literally severed limb from limb in their encounter. The formation of the foreleg enables the tibia to be so closed on the sharp edge of the thigh as to amputate any slender substance grasped within it.

[1] *M. aridifolia* and *M. extensicollis*, as well as *Empusa gongyloides*, remarkable for the long leaf-like head, and dilatations on the posterior thighs, are common in the island.

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The Stick-insect.—The *Phasmidæ* or spectres, another class of orthoptera, present as close a resemblance to small branches or leafless twigs as their congeners do to green leaves. The wing-covers, where they exist, instead of being expanded, are applied so closely to the body as to detract nothing from its rounded form, and hence the name which they have acquired of "*walking-sticks.*" Like the *Phyllium*, the *Phasma* lives exclusively on vegetables, and some attain the length of several inches.

Of all the other tribes of the *Orthoptera* Ceylon possesses many representatives; in swarms of cockroaches, grasshoppers, locusts, and crickets.

Neuroptera. *Dragon-flies.*—Of the *Neuroptera*, some of the dragon-flies are pre-eminently beautiful; one species, with rich brown-clouded spots upon its gauzy wings, is to be seen near every pool.[1] Another[2], which dances above the mountain streams in Oovah, and amongst the hills descending towards Kandy, gleams in the sun as if each of its green enamelled wings had been sliced from an emerald.[3]

The Ant-lion.—Of the ant-lion, whose larvæ have earned a bad renown from their predaceous ingenuity, Ceylon has, at least, four species, which seem peculiar to the island.[4] This singular creature, preparatory to its pupal transformation, contrives to excavate a conical pitfall in the dust to the depth of about an inch, in the bottom of which it conceals itself, exposing only its open mandibles above the surface; and here every ant and soft-bodied insect which curiosity tempts to descend, or accident may precipitate into the trap, is ruthlessly seized and devoured by its ambushed inhabitant.

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[1] *Libellula pulchella.*

[2] *Euphæa splendens,* Hagen.

[3] *Gymnacantha subinterrupta,* Ramb. distinguished by its large size, is plentiful about the mountain streamlets.

[4] *Palpares contrarius,* Walker; *Myrmeleon gravis,* Walker; *M. dirus,* Walker; *M. barbarus,* Walker.

The White Ant.—But of the insects of this order the most noted are the *white ants* or termites (which are ants only by a misnomer). They are, unfortunately, at once ubiquitous and innumerable in every spot where the climate is not too chilly, or the soil too sandy, for them to construct their domed edifices.

These they raise from a considerable depth under ground, excavating the clay with their mandibles, and moistening it with tenacious saliva[1] until it assume the appearance, and almost the consistency, of sandstone. So delicate is the trituration to which they subject this material, that the goldsmiths of Ceylon employ the powdered clay of the ant hills in preference to all other substances in the preparation of crucibles and moulds for their finer castings; and Knox says, in his time, "the people used this clay to make their earthen gods of, it is so pure and fine."[2] These structures the termites erect with such perseverance and durability that they frequently rise to the height of ten or twelve feet from the ground, with a corresponding diameter. They are

[1] It becomes an interesting question whence the termites derive the large supplies of moisture with which they not only temper the clay for the construction of their long covered-ways above ground, but for keeping their passages uniformly damp and cool below the surface. Yet their habits in this particular are unvarying, in the seasons of droughts as well as after rain; in the driest and least promising positions, in situations inaccessible to drainage from above, and cut off by rocks and impervious strata from springs from below. Dr. Livingstone, struck with this phenomenon in Southern Africa, asks: "Can the white ants possess the power of combining the oxygen and hydrogen of their vegetable food by vital force so as to form water?"—*Travels*, p. 22. And he describes at Angola an insect* resembling the *Aphrophora spumaria;* seven or eight individuals of which distil several pints of water every night.—P. 414. It is highly probable that the termites are endowed with some such faculty: nor is it more remarkable that an insect should combine the gases of its food to produce water, than that a fish should decompose water in order to provide itself with gas. FOURCROIX found the contents of the air-bladder in a carp to be pure nitrogen.—*Yarrell*, vol. i. p. 42. And the aquatic larva of the dragon-fly extracts air for its respiration from the water in which it is submerged. A similar mystery pervades the inquiry whence plants under peculiar circumstances derive the water essential to vegetation.

[2] KNOX'S *Ceylon*, Part I. ch. vi. p. 24.

* *A. goudotti?* Bennett.

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so firm in their texture that the weight of a horse makes no apparent indentation on their solidity; and even the intense rains of the monsoon, which no cement or mortar can long resist, fail to penetrate the surface or substance of an ant hill.[1]

In their earlier stages the termites proceed with such energetic rapidity, that I have seen a pinnacle of moist clay, six inches in height and twice as large in diameter, constructed underneath a table between sitting down to dinner and the removal of the cloth.

As these lofty mounds of earth have all been carried up from beneath the surface, a cave of corresponding dimensions is necessarily scooped out below, and here, under the multitude of cupolas and pinnacles which canopy it above, the termites hollow out the royal chamber for their queen, with spacious nurseries surrounding it on all sides. Store-rooms and magazines occupy the lower apartments, and all are connected by arched galleries, long passages, and doorways of the most intricate and elaborate construction. In the centre and underneath the spacious dome is the recess for the queen—a hideous creature, with the head and thorax of an ordinary termite, but a body swollen to a hundred times its usual and proportionate bulk, and presenting the appearance of a mass of shapeless pulp. From this great progenitrix proceed the myriads which people the subterranean hive, consisting, like the com-

[1] Dr. Hooker, in his *Himalayan Journal* (vol. i. p. 20) is of opinion that the nests of the termites are not independent structures, but that their nucleus is "the debris of clumps of bamboos or the trunks of large trees which these insects have destroyed." He supposes that the dead tree falls leaving the stump coated with sand, *which the action of the weather soon fashions into a cone.* But independently of the fact that the "action of the weather" produces little or no effect on the closely cemented clay of the white ants' nest, they may be daily seen constructing their edifices in the very form of a cone, which they ever after retain. Besides which, they appear in the midst of terraces and fields where no trees are to be seen: and Dr. Hooker seems to overlook the fact that the termites rarely attack a living tree; and although their nests may be built against one, it continues to flourish not the less for their presence.

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munities of the genuine ants, of labourers and soldiers, which are destined never to acquire a fuller development than that of larvæ, and the perfect insects which in due time become invested with wings and take their departing flight from the cave. But their new equipment seems only designed to facilitate their dispersion from the parent nest, which takes place at dusk; and almost as quickly as they leave it they divest themselves of their ineffectual wings, waving them impatiently and twisting them in every direction till they become detached and drop off, and the swarm, within a few hours of their emancipation, become a prey to the night-jars and bats, which are instantly attracted to them as they issue in a cloud from the ground. I am not prepared to say that the other insectivorous birds would not gladly make a meal of the termites, but, seeing that in Ceylon their numbers are chiefly kept in check by the crepuscular birds, it is observable, at least as a coincidence, that the dispersion of the swarm generally takes place at *twilight*. Those that escape the *caprimulgi* lose their wings before morning, and are then disposed of by the crows.

The strange peculiarity of the omnivorous ravages of the white ants is that they shrink from the light, in all their expeditions for providing food they construct a covered pathway of moistened clay, and their galleries above ground extend to an incredible distance from the central nest. No timber, except ebony and ironwood, which are too hard, and those which are strongly impregnated with camphor or aromatic oils, which they dislike, present any obstacle to their ingress. I have had a case of wine filled, in the course of two days, with almost solid clay, and only discovered the presence of the white ants by the bursting of the corks. I have had a portmanteau in my tent so peopled with them in the course of a single night that the contents were found worthless in the morning. In an incredibly short time a detachment of these pests will destroy a press full

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of records, reducing the paper to fragments; and a shelf of books will be tunnelled into a gallery if it happen to be in their line of march.

The timbers of a house when fairly attacked are eaten from within till the beams are reduced to an absolute shell, so thin that it may be punched through with the point of the finger; and even kyanized wood, unless impregnated with an extra quantity of corrosive sublimate, appears to occasion them no inconvenience. The only effectual precaution for the protection of furniture is incessant vigilance — the constant watching of every article, and its daily removal from place to place, in order to baffle their assaults.

They do not appear in the hills above the elevation of 2000 feet. One species of white ant, the *Termes Taprobanes*, was at one time believed by Mr. Walker to be peculiar to the island, but it has recently been found in Sumatra and Borneo, and in some parts of Hindustan.

HYMENOPTERA. *Mason Wasp.* — In Ceylon as in all other countries, the order of hymenopterous insects arrest us less by the beauty of their forms than the marvels of their sagacity and the achievements of their instinct. A fossorial wasp of the family of *Sphegidæ*[1], which is distinguished by its metallic lustre, enters by the open windows, and disarms irritation at its movements by admiration of the graceful industry with which it stops up the keyholes and similar apertures with clay in order to build in them a cell, into which it thrusts the pupa of some other insect, within whose body it has previously introduced its own eggs; and, enclosing the whole with moistened earth, the young parasite, after undergoing its transformations, gnaws its way into light, and emerges a four-winged fly.[2]

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[1] It belongs to the genus *Pelopæus*, *P. Spinolæ*, St. Fargeau. The *Ampulex compressa*, which drags about the larvæ of cockroaches into which it has implanted its eggs, belongs to the same family.

[2] Mr. E. L. Layard has given an interesting account of this Mason

Wasps. — Of the wasps, one formidable species (*Sphex ferruginea* of St. Fargeau), which is common to India and most of the eastern islands, is regarded with the utmost dread by the unclad natives, who fly precipitately on finding themselves in the vicinity[1] of its nests, which are of such ample dimensions, that when suspended from a branch, they often measure upwards of six feet in length.[2]

Bees. — Bees of several species and genera, some divested of stings, and some in size scarcely exceeding a house-fly, deposit their honey in hollow trees, or suspend their combs from a branch; and the spoils of their industry form one of the chief resources of the uncivilised Veddahs, who collect the wax in their

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wasp in the *Annals and Magazine of Nat. History* for May, 1853.

"I have frequently," he says, "selected one of these flies for observation, and have seen their labours extend over a period of a fortnight or twenty days; sometimes only half a cell was completed in a day, at others as much as two. I never saw more than twenty cells in one nest, seldom indeed that number, and whence the caterpillars were procured was always to me a mystery. I have seen thirty or forty brought in of a species which I knew to be very rare in the perfect state, and which I had sought for in vain, although I knew on what plant they fed.

"Then again how are they disabled by the wasp, and yet not injured so as to cause their immediate death? Die they all do, at least all that I have ever tried to rear, after taking them from the nest.

"The perfected fly never effects its egress from the closed aperture, through which the caterpillars were inserted, and when cells are placed end to end, as they are in many instances, the outward end of each is always selected. I cannot detect any difference in the thickness in the crust of the cell to cause this uniformity of practice. It is often as much as half an inch through, of great hardness, and as far as I can see impervious to air and light. How then does the enclosed fly always select the right end, and with what secretion is it supplied to decompose this mortar?"

[1] It ought to be remembered in travelling in the forests of Ceylon that sal volatile applied immediately is a specific for the sting of a wasp.

[2] At the January (1839) meeting of the Entomological Society, Mr. Whitehouse exhibited portions of a wasps' nest from Ceylon, between seven and eight feet long and two feet in diameter, and showed that the construction of the cells was perfectly analogous to those of the hive bee, and that when connected each has a tendency to assume a circular outline. In one specimen where there were three cells united the outer part was circular, whilst the portions common to the three formed straight walls. From this Singhalese nest Mr. Whitehouse demonstrated that the wasps at the commencement of their comb proceed slowly, forming the bases of several together, whereby they assume the hexagonal shape, whereas, if constructed separately, he thought each single cell would be circular. See *Proc. Ent. Soc.* vol. iii. p. xvi.

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upland forests, to be bartered for arrow points and clothes in the lowlands.[1] I have never heard of an instance of persons being attacked by the bees of Ceylon, and hence the natives assert, that those most productive of honey are destitute of stings.

The Carpenter Bee. — The operations of one of the most interesting of the tribe, the Carpenter bee[2], I have watched with admiration from the window of the Colonial Secretary's official residence at Kandy. So soon as the day grew warm, these active creatures were at work perforating the wooden columns which supported the verandah. They poised themselves on their shining purple wings, as they made the first lodgment in the wood, enlivening the work with an uninterrupted hum of delight, which was audible to a considerable distance. When the excavation had proceeded so far as that the insect could descend into it, the music was suspended, but renewed from time to time, as the little creature came to the orifice to throw out the chips, to rest, or to enjoy the fresh air. By degrees, a mound of saw-dust was formed at the base of the pillar, consisting of particles abraded by the mandibles of the bee; and these, when the hollow was completed to the depth of several inches, were partially replaced in the excavation after being agglutinated to form partitions between the eggs, as they are deposited within.

Ants. — As to ants, I apprehend that, notwithstanding their numbers and familiarity, information is very imperfect relative to the varieties and habits of these marvellous insects in Ceylon.[3] In point of multitude

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[1] A gentleman connected with the department of the Surveyor-General, writes to me that he measured a honey-comb which he found fastened to the overhanging branch of a small tree in the forest near Adam's Peak, and found it nine links of his chain or about six feet in length and a foot in breadth where it was attached to the branch, but tapering towards the other extremity. "It was a single comb with a layer of cells on either side, but so weighty that the branch broke by the strain."

[2] *Xylocopa tenuiscapa*, Westw.; *X. latipes*, Drury.

[3] Mr. Jerdan, in a series of papers in the thirteenth volume of the *Annals of Natural History*, has described forty-seven species of ants in South-

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it is scarcely an exaggeration to apply to them the figure of "the sands of the sea." They are everywhere; in the earth, in the houses, and in the trees; they are to be seen in every room and cupboard, and almost on every plant in the jungle. To some of the latter they are, perhaps, attracted by the sweet juices secreted by the aphides and coccidæ; and such is the passion of the ants for sugar, and their wonderful faculty of discovering it, that the smallest particle of a substance containing it, though placed in the least conspicuous position, is quickly covered with them, where not a single one may have been visible a moment before. But it is not sweet substances alone that they attack; no animal or vegetable matter comes amiss to them; no aperture appears too small to admit them; it is necessary to place everything which it may be desirable to keep free from their invasion, under the closest cover, or on tables with cups of water under every foot. As scavengers, they are invaluable; and as ants never sleep, but work without cessation, during the night as well as by day, every particle of decaying vegetable or putrid animal matter is removed with inconceivable speed and certainty. In collecting shells, I have been able to turn this propensity to good account; by placing them within their reach, the ants in a few days will remove every vestige of the mollusc from the innermost and otherwise inaccessible whorls; thus avoiding all risk of injuring the enamel by any mechanical process.

But the assaults of the ants are not confined to dead animals alone, they attack equally such small insects as they can overcome, or find disabled from accidents or wounds; and it is not unusual to see some hundreds of

ern India. But M. Nietner has recently forwarded to the Berlin Museum upwards of seventy species taken by him in Ceylon, chiefly in the western province and the vicinity of Colombo. Of these many are identical with those noted by Mr. Jerdan as belonging to the Indian continent. One (probably *Drepanognathus saltator* of Jerdan) is described by M. Nietner as "moving by jumps of several inches at a spring."

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them surrounding a maimed beetle, or a bruised cockroach, and hurrying it along in spite of its struggles. I have, on more than one occasion, seen a contest between them and one of the viscous ophidians, *Cæcilia glutinosa*[1], a reptile resembling an enormous earthworm, common in the Kandyan hills, of an inch in diameter, and nearly two feet in length. It would seem as if the whole community had been summoned and turned out for such a prodigious effort; they surrounded their victim literally in tens of thousands, inflicting wounds on all parts, and forcing it along towards their nest in spite of resistance. In one instance to which I was a witness, the conflict lasted for the latter part of a day, but towards evening the Cæcilia was completely exhausted, and in the morning it had totally disappeared, having been carried away either whole or piecemeal by its assailants.

The species I here allude to, is a very small ant, called the *Koombiya* in Ceylon. There is a still more minute description, which frequents the caraffes and toilet vessels, and is evidently a distinct species. A third, probably the *Formica nidificans* of Jerdan, is black, of the same size as that last mentioned, and, from its colour, called the *Kalu koombiya* by the natives. In the houses its propensities and habits are the same as the others; but I have observed that it frequents the trees more profusely, forming small paper cells for its young, like miniature wasps' nests, in which it deposits its eggs, suspending them from the leaf of a plant.

The most formidable of all is the great red ant or Dimiya.[2] It is particularly abundant in gardens, and on fruit trees; it constructs its dwellings by glueing the leaves of such species as are suitable from their shape and pliancy into hollow balls, which it lines with a kind of transparent paper, like that manufac-

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[1] See *ante*, Pt. I. ch. iii. p. 201.

[2] *Formica smaragdina*, Fab.

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tured by the wasp. I have watched them at the interesting operation of forming their dwellings; — a line of ants standing on the edge of one leaf bring another into contact with it, and hold both together with their mandibles till their companions within attach them firmly by means of their adhesive paper, the assistants outside moving along as the work proceeds. If it be necessary to draw closer a leaf too distant to be laid hold of by the immediate workers, they form a chain by depending one from the other till the object is reached, when it is at length brought into contact, and made fast by cement.

Like all their race, these ants are in perpetual motion, forming lines on the ground along which they pass, in incessant procession to and from the trees on which they reside. They are the most irritable of the whole order in Ceylon, biting with such intense ferocity as to render it difficult for the unclad natives to collect the fruit from the mango trees, which the red ants especially frequent. They drop from the branches upon travellers in the jungle, attacking them with venom and fury, and inflicting intolerable pain both upon animals and man. On examining the structure of the head through a microscope, I found that the mandibles, instead of merely meeting in contact, are so hooked as to cross each other at the points, whilst the inner line is sharply serrated throughout its entire length; thus occasioning the intense pain of their bite, as compared with that of the ordinary ant.

To check the ravages of the coffee bug (*Lecanium coffeæ*, Walker), which for some years past has devastated some of the plantations in Ceylon, the experiment was made of introducing the red ants, who feed greedily on the Coccus. But the remedy threatened to be attended with some inconvenience, for the Malabar Coolies, with bare and oiled skins, were so frequently and fiercely assaulted by the ants as to endanger their stay on the estates.

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The ants which burrow in the ground in Ceylon are generally, but not invariably, black, and some of them are of considerable size. One species, about the third of an inch in length, is abundant in the hills, and especially about the roots of trees, where they pile up the earth in circular heaps round the entrance to their nests, and in doing this I have observed a singular illustration of their instinct. To carry up each particle of sand by itself would be an endless waste of labour, and to carry two or more loose ones securely would be to them embarrassing, if not impossible; they therefore overcome the difficulty by glueing together with their saliva so much earth or sand as is sufficient for a burden, and each one may be seen hurrying up from below with his load, carrying it to the top of the circular heap outside, and throwing it over, whilst it is so strongly attached as to roll to the bottom without breaking asunder.

The ants I have been here describing are inoffensive, differing in this particular from the Dimiya and another of similar size and ferocity, which is called by the Singhalese *Kaddiya;* and they have a legend illustrative of their alarm for the bites of the latter, to the effect that the cobra de capello invested the Kaddiya with her own venom in admiration of the singular courage displayed by these little creatures.[1]

Lepidoptera. *Butterflies.* — Butterflies in the interior of the island are comparatively rare, and, contrary to the ordinary belief, they are seldom to be seen in the sunshine. They frequent the neighbourhood of the jungle, and especially the vicinity of the rivers and waterfalls, living mainly in the shade of the moist foliage, and returning to it in haste after the shortest flights, as if their slender bodies were speedily dried up and exhausted by the exposure to the intense heat.

Among the largest and most gaudy of the Ceylon Lepidoptera is the great black and yellow butterfly

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[1] Knox's *Historical Relation of Ceylon*, pt. i. ch. vi. p. 23.

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(*Ornithoptera darsius*, Gray); the upper wings, which often measure six inches across, are of deep velvet black, the lower, ornamented by large particles of satiny yellow, through which the sunlight passes, and few insects can compare with it in beauty, as it hovers over the flowers of the heliotrope, which furnish the favourite food of the perfect fly, although the caterpillar feeds on the aristolochia and the *betel leaf*, and suspends its chrysalis from its drooping tendrils.

Next in size as to expanse of wing, though often exceeding it in breadth, is the black and blue *Papilio Polymnestor*, which darts rapidly through the air, alighting on the ruddy flowers of the hibiscus, or the dark green foliage of the citrus, on which it deposits its eggs. The larvæ of this species are green with white bands, and have a hump on the fourth or fifth segment. From this hump the caterpillar, on being irritated, protrudes a singular horn of an orange colour, bifurcate at the extremity, and covered with a pungent mucilaginous secretion. This is evidently intended as a weapon of defence against the attack of the ichneumon flies, that deposit their eggs in its soft body, for when the grub is pricked, either by the ovipositor of the ichneumon, or by any other sharp instrument, the horn is at once protruded and struck upon the offending object with unerring aim.

Amongst the more common of the larger butterflies is the *P. Hector*, with gorgeous crimson spots set in the black velvet of the inferior wings; these, when fresh, are shot with a purple blush equalling in splendour the azure of the European "*Emperor.*"

Another butterfly, but belonging to a widely different group, is the "sylph" (*Hestia Jasonia*), called by the Europeans by the various names of *Floater*, *Spectre*, and *Silver-paper-fly*, as indicative of its graceful flight. It is found only in the deep shade of the damp forest, usually frequenting the vicinity of pools of water and cascades, about which it sails heedless of the spray,

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the moisture of which may even be beneficial in preserving the elasticity of its thin and delicate wings, that bend and undulate in the act of flight.

The *Lycænidæ*[1], a particularly attractive group, abound near the enclosures of cultivated grounds, and amongst the low shrubs edging the patenas, flitting from flower to flower, inspecting each in turn, and as if attracted by their beauty, in the full blaze of sun-light; and shunning exposure less sedulously than the other diurnals. Some of the more robust kinds[2] are magnificent in the bright light, from the splendour of their metallic blues and glowing purples, but they yield in elegance of form and variety to their tinier and more delicately coloured congeners.

Short as is the eastern twilight, it has its own peculiar forms, and the naturalist marks with interest the small, but strong, *Hesperiidæ*[3], hurrying, by abrupt and jerking flights, to the scented blossoms of the champac or the sweet night-blowing moon-flower; and, when darkness gathers around, we can hear, though hardly distinguish amid the gloom, the humming of the powerful wings of innumerable hawk moths, which hover with their long proboscides inserted into the starry petals of the periwinkle.

Conspicuous amidst these nocturnal moths is the richly-coloured *Acherontia Satanas*, one of the Singhalese representatives of our Death's head moth, which utters a sharp and stridulous cry when seized. This sound has been variously conjectured to be produced by the friction of its thorax against the abdomen, and Reaumur believed it to be caused by rubbing the palpi against the tongue. I have never been able to observe either motion, and Mr. E. L. Layard is of opinion that the sound is emitted from two apertures concealed by tufts of wiry bristles

[1] *Lycæna polyommatus, &c.*
[2] *Amblypodia pseudocentaurus, &c.*
[3] *Pamphila hesperia, &c.*

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thrown out from each side of the inferior portion of the thorax.[1]

Moths. — Among the strictly nocturnal *Lepidoptera* are some gigantic species. Of these the cinnamon-eating *Atlas*, often attains the dimensions of nearly a foot in the stretch of its superior wings. It is very common in the gardens about Colombo, and its size, and the transparent talc-like spots in its wings cannot fail to strike even the most careless saunterer. But little inferior to it in size is the famed Tusseh silk moth[2], which feeds on the country almond (*Terminalia catappa*) and the palma Christi or castor-oil plant; it is easily distinguishable from the Atlas, which has a triangular wing, whilst its is falcated, and the transparent spots are covered with a curious thread-like division drawn across them.

Towards the northern portions of the island this valuable species entirely displaces the other, owing to the fact that the almond and *palma Christi* abound there. The latter plant springs up spontaneously on every manure-heap or neglected spot of ground; and might be cultivated, as in India, with great advantage, the leaf to be used as food for the caterpillar, the stalk as fodder for cattle, and the seed for the expression of castor-oil. The Dutch took advantage of this facility, and gave every encouragement to the cultivation of silk at Jaffna[3], but it never attained such a development as to

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[1] There is another variety of the same moth in Ceylon which closely resembles it in its markings, but I have never detected in it the utterance of this curious cry. It is smaller than the *A. Satanas*, and, like it, often enters dwellings at night, attracted by the lights; but I have not found its larvæ, although that of the other species is common on several widely different plants.

[2] *Antheræa mylitta*, Drury.

[3] The Portuguese had made the attempt previous to the arrival of the Dutch, and a strip of land on the banks of the Kalany river, near Colombo, still bears the name of Orta Seda, the silk garden. The attempt of the Dutch to introduce the true silkworm, the *Bombyx mori*, took place under the governorship of Ryklof Van Goens, who, on handing over the administration to his successor in 1663 A.D., thus apprises him of the initiation of the experiment:—"At Jaffna Palace a trial has been undertaken to feed silkworms, and to ascertain whether silk may be reared at that station. I have planted a quantity of mulberry trees, which

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become an article of commercial importance. Ceylon now cultivates no silkworms whatever, notwithstanding this abundance of the favourite food of one species; and the rich silken robes sometimes worn by the Buddhist priesthood are still imported from China and the continent of India.

In addition to the Atlas moth and the Mylitta, there are many other *Bombycidæ* in Ceylon; and, though the silk of some of them, were it susceptible of being unwound from the cocoon, would not bear a comparison with that of the *Bombyx mori*, or even of the Tusseh moth, it might still prove to be valuable when carded and and spun. If the European residents in the colony would rear the larvæ of these Lepidoptera, and make drawings of their various changes, they would render a possible service to commerce, and a certain one to entomological knowledge.

The Wood-carrying Moth.— There is another family of insects, the singular habits of which will not fail to attract the traveller in the cultivated tracts of Ceylon — these are moths of the genus *Oiketicus* [1], of which the females are devoid of wings, and some possess no articulated feet: the larvæ construct for themselves cases, which they suspend to a branch frequently of the pomegranate [2], surrounding them with the stems of leaves, and thorns or pieces of twigs bound together by threads, till the whole presents the appearance of a bundle of rods about an inch and a half long; and, from the resemblance of this to a Roman fasces, one African species has obtained the name of "Lictor." The German entomologists denominated the group *Sack-träger*, the Singhalese call them *Dalme-kattea* or "billets of fire-

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grow well there, and they ought to be planted in other directions."—VALENTYN, chap. xiii. The growth of the mulberry trees is noticed the year after in a report to the governor-general of India, but the subject afterwards ceased to be attended to.

[1] *Eumeta*, Wlk.

[2] The singular instincts of a species of Thecla, *Dipsas Isocrates*, Fab., in connection with the fruit of the pomegranate, were fully described by Mr. Westwood, in a paper read before the Entomological Society of London in 1835.

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wood," and regard the inmates as human beings, who, as a punishment for stealing wood in some former stage of existence, have been condemned to undergo a metempsychosis under the form of these insects.

The male, at the close of the pupal rest, escapes from one end of this singular covering, but the female makes it her dwelling for life; moving about with it at pleasure, and entrenching herself within it, when alarmed, by drawing together the purse-like aperture at the open end. Of these remarkable creatures there are five ascertained species in Ceylon. *Psyche Doubledaii*, Westw.; *Metisa plana*, Walker; *Eumeta Cramerii*, Westw.; *E. Templetonii*, Westw.; and *Cryptothelea consorta*, Temp.

All the other tribes of minute *Lepidoptera* have abundant representatives in Ceylon; some of them most attractive from the great beauty of their markings and colouring. The curious little split-winged moth (*Pterophorus*) is frequently seen in the cinnamon gardens and the vicinity of the fort, resting in the noonday heat in the cool grass shaded by the coco-nut topes. Three species have been captured, all characterised by the same singular feature of having the wings fan-like, separated nearly their entire length into detached sections resembling feathers in the pinions of a bird expanded for flight.

HOMOPTERA. *Cicada.*—Of the *Homoptera*, the one which will most frequently arrest attention is the cicada, which, resting high up on the bark of a tree, makes the forest re-echo with a long-sustained noise so curiously resembling that of a cutler's wheel that the creature which produces it has acquired the highly-appropriate name of the "knife-grinder."

HEMIPTERA. *Bugs.*—On the shrubs in his compound the newly-arrived traveller will be attracted by an insect of a pale green hue and delicately-thin configuration, which, resting from its recent flight, composes its scanty wings, and moves languidly along the leaf. But experience will teach him to limit his examination to a

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respectful view of its attitudes; it is one of a numerous family of bugs, (some of them most attractive[1] in their colouring,) which are inoffensive if unmolested, but if touched or irritated, exhale an odour that, once perceived, is never after forgotten.

APHANIPTERA. *Fleas.*—Fleas are equally numerous, and may be seen in myriads in the dust of the streets or skipping in the sunbeams which fall on the clay floors of the cottages. The dogs, to escape them, select for their sleeping places spots where a wood fire has been previously kindled; and here prone on the white ashes, their stomachs close to the earth, and their hind legs extended behind, they repose in comparative coolness, and bid defiance to their persecutors.

DIPTERA. *Mosquitoes.*—But of all the insect pests that beset an unseasoned European the most provoking by far are the truculent mosquitoes.[2] Even in the midst of endurance from their onslaughts one cannot but be amused by the ingenuity of their movements; as if aware of the risk incident to an open assault, a favourite mode of attack is, when concealed by a table, to assail the ankles through the meshes of the stocking, or the knees which are ineffectually protected by a fold of Russian duck. When you are reading, a mosquito will rarely settle on that portion of your hand which is within range of your eyes, but cunningly stealing by the underside of the book fastens on the wrist or little finger, and noiselessly inserts his proboscis there. I have tested the classical expedient recorded by Herodotus, who states that the fishermen inhabiting the fens of Egypt cover their beds with their nets, knowing that the mosquitoes, although they bite through linen

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[1] Such as *Cantuo ocellatus, Leptoscelis Marginalis, Callidea Stockerius, &c. &c.* Of the aquatic species, the gigantic *Belostoma indicum* cannot escape notice, attaining a size of nearly three inches.

[2] *Culex laniger?* Wied. In Kandy Mr. Thwaites finds *C. fuscanus, C. circumvolens, &c.*, and one with a most formidable hooked proboscis, to which he has assigned the appropriate name *C. regius.*

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robes, will not venture through a net.[1] But, notwithstanding the opinion of Spence[2], that nets with meshes an inch square will effectually exclude them, I have been satisfied by painful experience that (if the theory is not altogether fallacious,) at least the modern mosquitoes of Ceylon are uninfluenced by the same considerations which restrained those of the Nile under the successors of Cambyses.

List of Ceylon Insects.

For the following list of the insects of the island, and the remarks prefixed to it, I am indebted to Mr. F. Walker, by whom it has been prepared after a careful inspection of the collections made by Dr. Templeton, Mr. E. L. Layard, and others; as well as those in the British Museum and in the Museum of the East India Company.

"A short notice of the aspect of the Island will afford the best means of accounting, in some degree, for its entomological Fauna: first, as it is an island, and has a mountainous central region, the tropical character of its productions, as in most other cases, rather diminishes, and somewhat approaches that of higher latitudes.

"The coast-region of Ceylon, and fully one-third of its northern part, have a much drier atmosphere than that of the rest of its surface; and their climate and vegetation are nearly similar to those of the Carnatic, with which this island may have been connected at no very remote period.[3] But if, on the contrary, the land in Ceylon is gradually rising, the difference of its Fauna from that of Central Hindostan is less remarkable. The peninsula of the Dekkan might then be conjectured to have been nearly or wholly separated from the central part of Hindostan, and confined to the range of mountains along the eastern coast; the insect-fauna of which is as

[1] HERODOTUS, *Euterpe*, xcv.

[2] KIRBY and SPENCE'S *Entomology*, letter iv.

[3] On the subject of this conjecture, see *ante*, Vol. I. Pt. I. ch. i. p. 7.

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yet almost unknown, but will probably be found to have more resemblance to that of Ceylon than to the insects of northern and western India—just as the insect-fauna of Malaya appears more to resemble the similar productions of Australasia than those of the more northern continent.

"Mr. Layard's collection was partly formed in the dry northern province of Ceylon; and among them more Hindostan insects are to be observed than among those collected by Dr. Templeton, and found wholly in the district between Colombo and Kandy. According to this view the faunas of the Neilgherry Mountains, of Central Ceylon, of the peninsula of Malacca, and of Australasia would be found to form one group;—while those of Northern Ceylon, of the western Dekkan, and of the level parts of Central Hindostan would form another of more recent origin. The insect-fauna of the Carnatic is also probably similar to that of the lowlands of Ceylon; but it is still unexplored. The regions of Hindostan in which species have been chiefly collected, such as Bengal, Silhet, and the Punjaub, are at the distance of from 1300 to 1600 miles from Ceylon, and therefore the insects of the latter are fully as different from those of the above regions as they are from those of Australasia, to which Ceylon is as near in point of distance, and agrees more with regard to latitude.

"Dr. Hagen has remarked that he believes the fauna of the mountains of Ceylon to be quite different from that of the plains and of the shores. The south and west districts have a very moist climate, and as their vegetation is like that of Malabar, their insect-fauna will probably also resemble that of the latter region.

"The insects mentioned in the following list are thus distributed:—

Order Coleoptera.

"The recorded species of *Cicindelidæ* inhabit the plains or the coast country of Ceylon, and several of them are also found in Hindostan.

"Many of the species of *Carabidæ* and of *Staphylinidæ*, especially those collected by Mr. Thwaites near Kandy, and by M. Nietner at Colombo, have much resemblance to the insects of these two families in North Europe; in the *Scydmænidæ*, *Ptiliadæ*, *Phalacridæ*, *Nitidulidæ*, *Colydiadæ*, and *Lathridiadæ* the northern form is still more striking, and strongly contrasts

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with the tropical forms of the gigantic *Copridæ*, *Buprestidæ*, and, *Cerambycidæ*, and with the *Elateridæ*, *Lampyridæ*, *Tenebrionidæ*, *Helopidæ*, *Meloidæ*, *Curculionidæ*, *Prionidæ*, *Cerambycidæ*, *Lamiidæ*, and *Endomychidæ*.

"The *Copridæ*, *Dynastidæ*, *Melolonthidæ*, *Cetoniadæ*, and *Passalidæ* are well represented on the plains and on the coast, and the species are mostly of a tropical character.

"The *Hydrophilidæ* have a more northern aspect, as is generally the case with aquatic species.

"The order *Strepsiptera* is here considered as belonging to the *Mordellidæ*, and is represented by the genus *Myrmecolax*, which is peculiar, as yet, to Ceylon.

"In the *Curculionidæ* the single species of *Apion* will recall to mind the great abundance of that genus in North Europe.

"The *Prionidæ* and the two following families have been investigated by Mr. Pascoe, and the *Hispidæ*, with the five following families, by Mr. Baly; these two gentlemen are well acquainted with the above tribes of beetles, and kindly supplied me with the names of the Ceylon species.

Order ORTHOPTERA.

"These insects in Ceylon have mostly a tropical aspect. The *Physapoda*, which will probably be soon incorporated with them, are likely to be numerous, though only one species has as yet been noticed.

Order NEUROPTERA.

"The list here given is chiefly taken from the catalogue published by Dr. Hagen, and containing descriptions of the species named by him or by M. Nietner. They were found in the most elevated parts of the island, near Rambodde, and Dr. Hagen informs me that not less than 500 species have been noticed in Ceylon, but that they are not yet recorded, with the exception of the species here enumerated. It has been remarked that the *Trichoptera* and other aquatic *Neuroptera* are less local than the land species, owing to the more equable temperature of the habitation of their larvæ, and on account of their being often conveyed along the whole length of rivers. The species of *Psocus* in the list are far more numerous than those yet observed in any other country, with the exception of Europe.

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Order Hymenoptera.

"In this order the *Formicidæ* and the *Poneridæ* are very numerous, as they are in other damp and woody tropical countries. Seventy species of ants have been observed, but as yet few of them have been named. The various other families of aculeate *Hymenoptera* are doubtless more abundant than the species recorded indicate, and it may be safely reckoned that the parasitic *Hymenoptera* in Ceylon far exceed one thousand species in number, though they are yet only known by means of about two dozen kinds collected at Kandy by Mr. Thwaites.

Order Lepidoptera.

"The fauna of Ceylon is much better known in this order than in any other of the insect tribes, but as yet the *Lepidoptera* alone in their class afford materials for a comparison of the productions of Ceylon with those of Hindostan and of Australasia; 932 species have been collected by Dr. Templeton and by Mr. Layard in the central, western, and northern parts of the island. All the families, from the *Papilionidæ* to the *Tineidæ*, abound, and numerous species and several genera appear, as yet, to be peculiar to the island. As Ceylon is situate at the entrance to the eastern regions, the list in this volume will suitably precede the descriptive catalogues of the heterocerous *Lepidoptera* of Hindostan, Java, Borneo, and of other parts of Australasia, which are being prepared for publication. In some of the heterocerous families several species are common to Ceylon and to Australasia, and in various cases the faunas of Ceylon and of Australasia seem to be more similar than those of Ceylon and of Hindostan. The long intercourse between those two regions may have been the means of conveying some species from one to the other. Among the *Pyralites*, *Hymenia recurvalis* inhabits also the West Indies, South America, West Africa, Hindostan, China, Australasia, Australia, and New Zealand; and its food-plant is probably some vegetable which is cultivated in all those regions; so also *Desmia afflictalis* is found in Sierra Leone, Abyssinia, Ceylon, and China.

Order Diptera.

"About fifty species were observed by Dr. Templeton, but most of those here recorded were collected by Mr. Thwaites at Kandy, and have a great likeness to North European species.

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The mosquitoes are very annoying on account of their numbers, as might be expected from the moisture and heat of the climate. *Culex laniger* is the coast species, and the other kinds here mentioned are from Kandy. Humboldt observed that in some parts of South America each stream had its peculiar mosquitoes, and it yet remains to be seen whether the gnats in Ceylon are also thus restricted in their habitation. The genera *Sciara, Cecidomyia*, and *Simulium*, which abound so exceedingly in temperate countries, have each one representative species in the collection made by Mr. Thwaites. Thus an almost new field remains for the Entomologist in the study of the yet unknown Singhalese Diptera, which must be very numerous.

Order HEMIPTERA.

"The species of this order in the list are too few and too similar to those of Hindustan to need any particular mention. *Lecanium coffeæ* may be noticed, on account of its infesting the coffee plant, as its name indicates, and the ravages of other species of the genus will be remembered, from the fact that one of them, in other regions, has put a stop to the cultivation of the orange as an article of commerce.

"In conclusion, it may be observed that the species of insects in Ceylon may be estimated as exceeding 10,000 in number, of which about 2000 are enumerated in this volume.

Class ARACHNIDA.

"Four or five species of spiders, of which the specimens cannot be satisfactorily described; one *Ixodes* and one *Chelifer* have been forwarded to England from Ceylon by Mr. Thwaites."

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NOTE.—The asterisk prefixed denotes the species discovered in Ceylon since Sir J. E. Tennent's departure from the Island in 1849.

ORDER, **Coleoptera**, *Linn.*

Fam. CICINDELIDÆ, *Steph.*

Cicindela, *Linn.*
flavopunctata, *Aud.*
discrepans, *Wlk.*
aurofasciata, *Guér.*
quadrilineata, *Fabr.*
biramosa, *Fabr.*
catena, *Fabr.*
*insignificans, *Dohrn.*
Tricondyla, *Latr.*
femorata, *Wlk.*
*tumidula, *Wlk.*
*scitiscabra, *Wlk.*
*concinna, *Dohrn.*

Fam. CARABIDÆ, *Leach.*

Casnonia, *Latr.*
*punctata, *Niet.*
*pilifera, *Niet.*
Ophionea, *Klug.*
*cyanocephala, *Fabr.*
Euplynes, *Niet.*
Dohrnii, *Niet.*
Heteroglossa, *Niet.*
*elegans, *Niet.*
*ruficollis, *Niet.*
*bimaculata, *Niet.*
Zuphium, *Latr.*
*pubescens, *Niet.*
Pheropsophus, *Solier.*
Catoirei, *Dej.*
bimaculatus, *Fabr.*
Cymindis, *Latr.*
rufiventris, *Wlk.*
Anchista, *Niet.*
*modesta, *Niet.*
Dromius, *Bon.*
marginifer, *Wlk.*
repandens, *Wlk.*
Lebia, *Latr.*
bipars, *Wlk.*
Creagris, *Niet.*
labrosa, *Niet.*
Elliotia, *Niet.*
pallipes, *Niet.*
Maraga, *Wlk.*
planigera, *Wlk.*
Catascopus, *Kirby.*
facialis, *Wied.*
reductus, *Wlk.*
Scarites, *Fabr.*
obliterans, *Wlk.*
subsignans, *Wlk.*
designans, *Wlk.*
*minor, *Niet.*
Clivina, *Latr.*
*rugosifrons, *Niet.*
*elongatula, *Niet.*
*maculata, *Niet.*
recta, *Wlk.*
Leistus, *Frœhl.*
linearis, *Wlk.*
Isotarsus, *Laferté.*
quadrimaculatus, *Oliv.*
Panagæus, *Latr.*
retractus, *Wlk.*
Chlænius, *Bon.*
bimaculatus, *Dej.*
diffinis, *Reiche.*
*Ceylanicus, *Niet.*
*quinque-maculatus, *Niet.*
pulcher, *Niet.*
cupricollis, *Niet.*
rugulosus, *Niet.*
Anchomenus, *Bon.*
illocatus, *Wlk.*
Agonum, *Bon.*
placidulum, *Wlk.*
Colpodes ? *Macl.*
marginicollis, *Wlk.*
Argutor, *Meg.*
degener, *Wlk.*
relinquens, *Wlk.*
Simphyus, *Niet.*
*unicolor, *Niet.*
Bradytus, *Steph.*
stolidus, *Wlk.*
Curtonotus, *Steph.*
compositus, *Wlk.*
Harpalus, *Latr.*
*advolans, *Niet.*
dispellens, *Wlk.*
Calodromus, *Niet.*
*exornatus, *Niet.*
Megaristerus, *Niet.*
*mandibularis, *Niet.*
*stenolophoides, *Niet.*
*Indicus, *Niet.*
Platysma, *Bon.*
retinens, *Wlk.*
Morio, *Latr.*
trogositoides, *Wlk.*
cucujoides, *Wlk.*
Barysomus, *Dej.*
*Gyllenhalii, *Dej.*
Oodes, *Bon.*
*piceus, *Niet.*
Selenophorus, *Dej.*
infixus, *Wlk.*
Orthogonius, *Dej.*
femoratus, *Dej.*
Helluodes, *Westw.*
Taprobanæ, *Westw.*
Physocrotaphus, *Parry.*
Ceylonicus, *Parry.*
*minax, *West.*
Physodera, *Esch.*
Eschscholtzii, *Parry.*
Omphra, *Latr.*
*ovipennis, *Reiche.*
Planetes, *Macl.*
bimaculatus, *Macleay.*
Cardiaderus, *Dej.*
scitus, *Wlk.*
Distrigus, *Dej.*
*costatus, *Niet.*
*submetallicus, *Niet.*
*rufopiceus, *Niet.*
*æneus, *Niet.*
*Dejeani, *Niet.*
Drimostoma, *Dej.*
*Ceylanicum, *Niet.*
*marginale, *Wlk.*
Cyclosomus, *Latr.*
flexuosus, *Fabr.*
Ochthephilus, *Niet.*
*Ceylanicus, *Niet.*
Spathinus, *Niet.*
*nigriceps, *Niet.*
Acupalpus, *Latr.*
derogatus, *Wlk.*
extremus, *Wlk.*
Bembidium, *Latr.*
finitimum, *Wlk*
*opulentum, *Niet.*
*truncatum, *Niet.*
*tropicum, *Niet.*
*triangulare, *Niet.*
*Ceylanicum, *Niet.*
Klugii, *Niet.*
*ebeninum, *Niet.*
*orientale, *Niet.*
*emarginatum, *Niet.*
*ornatum, *Niet.*
*scydmænoides, *Niet.*

Fam. PAUSSIDÆ, *Westw.*

Cerapterus, *Swed.*
latipes, *Swed.*
Pleuropterus, *West.*
Westermanni, *West.*
Paussus, *Linn.*
pacificus, *West.*

Fam. DYTISCIDÆ, *Macl.*

Cybister, *Curt.*
limbatus, *Fabr.*
Dytiscus, *Linn.*
extenuans, *Wlk.*
Eunectes, *Erich.*
griseus, *Fabr.*
Hydaticus, *Leach.*
festivus, *Ill.*
vittatus, *Fabr.*
dislocans, *Wlk.*
fractifer, *Wlk.*

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Colymbetes, *Clairv.*
interclusus, *Wlk.*
Hydroporus, *Clairv.*
interpulsus, *Wlk.*
intermixtus, *Wlk.*
lætabilis, *Wlk.*
*inefficiens, *Wlk.*

Fam. GYRINIDÆ, *Leach.*

Dineutes, *Macl.*
spinosus, *Fabr.*
Porrorhynchus, *Lap.*
indicans, *Wlk.*
Gyretes, *Brullé.*
discifer, *Wlk.*
Gyrinus, *Linn.*
nitidulus, *Fabr.*
obliquus, *Wlk.*
Orectochilus, *Esch.*
*lenocinium, *Dohrn.*

Fam. STAPHILINIDÆ, *Leach.*

Ocypus, *Kirby.*
longipennis, *Wlk.*
congruus, *Wlk.*
punctilinea, *Wlk.*
*lineatus, *Wlk.*
Philonthus, *Leach.*
*pedestris, *Wlk.*
Xantholinus, *Dahl.*
cinctus, *Wlk.*
*inclinans, *Wlk.*
Sunius, *Leach.*
*obliquus, *Wlk.*
Œdichirus, *Erich.*
*alatus, *Niet.*
Pœderus, *Fabr.*
alternans, *Wlk.*
Stenus, *Latr.*
*barbatus, *Niet.*
*lacertoides, *Niet.*
Osorius? *Leach.*
*compactus, *Wlk.*
Prognatha, *Latr.*
decisa, *Wlk.*
*tenuis, *Wlk.*
Leptochirus, *Perty.*
*bispinus, *Erich.*
Oxytelus, *Grav.*
rudis, *Wlk.*
productus, *Wlk.*
*bicolor, *Wlk.*
Trogophlœus? *Mann.*
*Taprobanæ, *Wlk.*
Omalium, *Grav.*
filiforme, *Wlk.*
Aleochara, *Grav.*
postica, *Wlk.*
*translata, *Wlk.*
*subjecta, *Wlk.*

Dinarda, *Leach.*
serricornis, *Wlk.*

Fam. PSELAPHIDÆ, *Leach.*

Pselaphanax, *Wlk.*
setosus, *Wlk.*

Fam. SCYDMÆNIDÆ, *Leach.*

Erineus, *Wlk.*
monstrosus, *Wlk.*
Scydmænus, *Latr.*
*megamelas, *Wlk.*
*alatus, *Niet.*
*femoralis, *Niet.*
*Ceylanicus, *Niet.*
*intermedius, *Niet.*
*pselaphoides, *Niet.*
*advolans, *Niet.*
*pubescens, *Niet.*
*pygmæus, *Niet.*
*glanduliferus, *Niet.*
*graminicola, *Niet.*
*pyriformis, *Niet.*
*angusticeps, *Niet.*
*ovatus, *Niet.*

Fam. PTILIADÆ, *Woll.*

Trichopteryx, *Kirby.*
*cursitans, *Niet.*
*immatura, *Niet.*
*invisibilis, *Niet.*
Ptilium, *Schüpp.*
*subquadratum, *Niet.*
Ptenidium, *Erich.*
*macrocephalum, *Niet.*

Fam. PHALACRIDÆ, *Leach.*

Phalacrus, *Payk.*
conjiciens, *Wlk.*
confectus, *Wlk.*

Fam. NITIDULIDÆ, *Leach.*

Nitidula, *Fabr.*
contigens, *Wlk.*
intendens, *Wlk.*
significans, *Wlk.*
tomentifera, *Wlk.*
*submaculata, *Wlk.*
*glabricula, *Dohrn.*
Nitidulopsis, *Wlk.*
æqualis, *Wlk.*
Meligethes, *Kirby.*
*orientalis, *Niet.*
*respondens, *Wlk.*
Rhizophagus, *Herbst.*
parallelus, *Wlk.*

Fam. COLYDIADÆ, *Woll.*

Lyctus, *Fabr.*
retractus, *Wlk.*
disputans, *Wlk.*
Ditoma, *Illig.*
rugicollis, *Wlk.*

Fam. TROGOSITIDÆ, *Kirby.*

Trogosita, *Oliv.*
insinuans, *Wlk.*
*rhyzophagoides, *Wlk.*

Fam. CUCUJIDÆ, *Steph.*

Lœmophlœus, *Dej.*
ferrugineus, *Wlk.*
Cucujus? *Fabr.*
*incommodus, *Wlk.*
Silvanus, *Latr.*
retrahens, *Wlk.*
*scuticollis, *Wlk.*
*porrectus, *Wlk.*
Brontes, *Fabr.*
*orientalis, *Dej.*

Fam. LATHRIDIADÆ, *Woll.*

Lathridius, *Herbst.*
perpusillus, *Wlk.*
Corticaria, *Marsh.*
resecta, *Wlk.*
Monotoma, *Herbst.*
concinnula, *Wlk.*

Fam. DERMESTIDÆ, *Leach.*

Dermestes, *Linn.*
vulpinus, *Fabr.*
Attagenus, *Latr.*
defectus, *Wlk.*
rufipes, *Wlk.*
Trinodes, *Meg.*
hirtellus, *Wlk.*

Fam. BYRRHIDÆ, *Leach.*

Inclica, *Wlk.*
solida, *Wlk.*

Fam. HISTERIDÆ, *Leach.*

Hister, *Linn.*
Bengalensis, *Weid.*
encaustus, *Mars.*
orientalis, *Payk.*
bipustulatus, *Fabr.*
*mundissimus, *Wlk.*
Saprinus, *Erich.*
semipunctatus, *Fabr.*
Platysoma, *Leach.*
atratum? *Erichs.*
desinens, *Wlk.*
restoratum, *Wlk.*

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Dendrophilus, *Leach.*
finitimus, *Wlk.*

Fam. APHODIADÆ, *Macl.*

Aphodius, *Illig.*
robustus, *Wlk.*
dynastoides, *Wlk.*
pallidicornis, *Wlk.*
mutans, *Wlk.*
sequens, *Wlk.*
Psammodius, *Gyll.*
inscitus, *Wlk.*

Fam. TROGIDÆ, *Macl.*

Trox, *Fabr.*
inclusus, *Wlk.*
cornutus, *Fabr.*

Fam. COPRIDÆ, *Leach.*

Ateuchus, *Weber.*
sacer, *Linn.*
Gymnopleurus, *Illig.*
smaragdifer, *Wlk.*
Kœnigii, *Fabr.*
Sisyphus, *Latr.*
setosulus, *Wlk.*
subsidens, *Wlk.*
prominens, *Wlk.*
Orepanocerus, *Kirby.*
Taprobanæ, *West.*
Copris, *Geoffr.*
Pirmal, *Fabr.*
sagax, *Quens.*
capucinus, *Fabr.*
cribricollis, *Wlk.*
repertus, *Wlk.*
sodalis, *Wlk.*
signatus, *Wlk.*
diminutivus, *Wlk.*
Onthophagus, *Latr.*
Bonassus, *Fabr.*
cervicornis, *Fabr.*
prolixus, *Wlk.*
gravis, *Wlk.*
difficilis, *Wlk.*
lucens, *Wlk.*
negligens, *Wlk.*
mœrens, *Wlk.*
turbatus, *Wlk.*
Onitis, *Fabr.*
Philemon, *Fabr.*

Fam. DYNASTIDÆ, *Macl.*

Oryctes, *Illig.*
rhinoceros, *Linn.*
Xylotrupes, *Hope.*
Gideon, *Linn.*
reductus, *Wlk.*
solidipes, *Wlk.*
Phileurus, *Latr.*
detractus, *Wlk.*
Orphnus, *Macl.*
detegens, *Wlk.*
scitissimus, *Wlk.*

Fam. GEOTRUPIDÆ, *Leach.*

Bolboceras, *Kirby.*
lineatus, *Westw.*

Fam. MELOLONTHIDÆ, *Macl.*

Melolontha, *Fabr.*
nummicudens, *Newm.*
rubiginosa, *Wlk.*
ferruginosa, *Wlk.*
seriata, *Hope.*
pinguis, *Wlk.*
setosa, *Wlk.*
Rhizotrogus, *Latr.*
hirtipectus, *Wlk.*
æqualis, *Wlk.*
costatus, *Wlk.*
inductus, *Wlk.*
exactus, *Wlk.*
sulcifer, *Wlk.*
Phyllopertha, *Kirby.*
transversa, *Burm.*
Silphodes, *Westw.*
Indica, *Westw.*
Trigonostoma, *Dej.*
assimile, *Hope.*
compressum? *Weid.*
nanum, *Wlk.*
Serica, *Macl.*
pruinosa, *Hope.*
Popilia, *Leach.*
marginicollis, *Newm.*
cyanella, *Hope.*
discalis, *Wlk.*
Sericesthis, *Dej.*
rotundata, *Wlk.*
subsignata, *Wlk.*
mollis, *Wlk.*
confirmata, *Wlk.*
Plectris, *Lep. & Serv.*
solida, *Wlk.*
punctigera, *Wlk.*
glabrilinea, *Wlk.*
Isonychus, *Mann.*
ventralis, *Wlk.*
pectoralis, *Wlk.*
Omaloplia, *Meg.*
fracta, *Wlk.*
interrupta, *Wlk.*
semicincta, *Wlk.*
*hamifera, *Wlk.*
*picta, *Dohrn.*
*nana, *Dohrn.*
Apogonia, *Kirby.*
nigricans, *Hope.*
Phytalus, *Erich.*
curystomus, *Burm.*
Ancylonycha, *Dej.*
Reynaudii, *Blanch.*
Leucopholis, *Dej.*
Mellei, *Guer.*
pinguis, *Burm.*
Anomala, *Meg.*
elata, *Fabr.*
humeralis, *Wlk.*
discalis, *Wlk.*
varicolor, *Sch.*
conformis, *Wlk.*
similis, *Hope.*
punctatissima, *Wlk.*
infixa, *Wlk.*
Mimela, *Kirby*
variegata, *Wlk.*
mundissima, *Wlk.*
Parastasia, *Westw.*
rufopicta, *Westw.*
Euchlora, *Macl.*
viridis, *Fabr.*
perplexa, *Hope.*

Fam. CETONIADÆ, *Kirby.*

Glycyphana, *Burm.*
versicolor, *Fabr.*
luctuosa, *Gory.*
variegata, *Fabr.*
marginicollis, *Gory.*
Clinteria, *Burm.*
imperialis, *Schaum.*
incerta, *Parry.*
chloronota, *Blanch.*
Tæniodera, *Burm.*
Malabariensis, *Gory.*
quadrivittata, *White.*
alboguttata, *Vigors.*
Protætia, *Burm.*
maculata, *Fabr.*
Whitehousii, *Parry.*
Agestrata, *Erich.*
nigrita, *Fabr.*
orichalcea, *Linn.*
Coryphocera, *Burm.*
elegans, *Fabr.*
Macronota, *Hoffm.*
quadrivittata, *Sch.*

Fam. TRICHIADÆ, *Leach.*

Valgus, *Scriba.*
addendus, *Wlk.*

Fam. LUCANIDÆ, *Leach.*

Odontolabis, *Burm.*
Bengalensis, *Parry.*
emarginatus, *Dej.*
Ægus, *Macl.*
acuminatus, *Fabr.*
lunatus, *Fabr.*
Singhala, *Blanch.*
tenella, *Blanch.*

Fam. PASSALIDÆ, *Macl.*

Passalus, *Fabr.*
transversus, *Dohrn.*
interstitialis, *Perch.*
punctiger? *Lefeb.*
bicolor, *Fabr.*

Fam. SPHÆRIDIADÆ, *Leach.*

Sphæridium, *Fabr.*
tricolor, *Wlk.*
Cercyon, *Leach.*
*vicinale, *Wlk.*

Fam. HYDROPHILIDÆ, *Leach.*

Hydrous, *Leach.*
*rufiventris, *Niet.*
*inconspicuus, *Niet.*
Hydrobius, *Leach.*
stultus, *Wlk.*
Philydrus, *Solier.*
esuriens, *Wlk.*
Berosus, *Leach.*
*decrescens, *Wlk.*
Hydrochus, *Germ.*
*lacustris, *Niet.*
Georyssus, *Latr.*
*gemma, *Niet.*
*insularis, *Dohrn.*
Dastarcus, *Wlk.*
porosus, *Wlk.*

Fam. BUPRESTIDÆ, *Stph.*

Sternocera, *Esch.*
chrysis, *Linn.*
sternicornis, *Linn.*
Chrysochroa, *Solier.*
ignita, *Linn.*
Chinensis, *Lap.*
Rajah, *Lap.*
*cyaneocephala, *Fabr.*
Chrysodema, *Lap.*
sulcata, *Thunb.*
Belionota, *Esch.*
scutellaris, *Fabr.*
*Petiti, *Gory.*
Chrysobothris, *Esch.*
suturalis, *Wlk.*
Agrilus, *Meg.*
sulcicollis, *Wlk.*
*cupreiceps, *Wlk.*
*cupreicollis, *Wlk.*
*armatus, *Fabr.*

Fam. ELATERIDÆ, *Leach.*

Campsosternos, *Latr.*
Templetonii, *Westw.*
aureolus, *Hope.*
Bohemannii, *Cand.*
venustulus, *Cand.*
pallidipes, *Cand.*
Agrypnus, *Esch.*
fuscipes, *Fabr.*
Alaus, *Esch.*
speciosus, *Linn.*
sordidus, *Westw.*
Cardiophorus, *Esch.*
humerifer, *Wlk.*
Corymbites, *Latr.*
dividens, *Wlk.*
divisa, *Wlk.*
*bivittava, *Wlk.*
Lacon, *Lap*
*obesus, *Cand.*
Athous, *Esch.*
punctosus, *Wlk.*
inapertus, *Wlk.*
decretus, *Wlk.*
inefficiens, *Wlk.*
Ampedus, *Meg.*
*acutifer, *Wlk.*
*discicollis, *Wlk.*
Legna, *Wlk.*
idonea, *Wlk.*

Fam. LAMPYRIDÆ, *Leach.*

Lycus, *Fabr.*
triangularis, *Hope.*
geminus, *Wlk.*
astutus, *Wlk.*
fallax, *Wlk.*
planicornis, *Wlk.*
melanopterus, *Wlk.*
pubicornis, *Wlk.*
duplex, *Wlk.*
costifer, *Wlk.*
revocans, *Wlk.*
dispellens, *Wlk.*
*pubipennis, *Wlk.*
*humerifer, *Wlk.*
expansicornis, *Wlk.*
divisus, *Wlk.*
Dictyopterus, *Latr.*
internexus, *Wlk.*
Lampyris, *Geoff.*
tenebrosa, *Wlk.*
diffinis, *Wlk.*
lutescens, *Wlk.*
*vitrifera, *Wlk.*
Colophotia, *Dej.*
humeralis, *Wlk.*
[vespertina, *Fabr.*
perplexa, *Wlk.* ?]
intricata, *Wlk.*
extricans, *Wlk.*
promelas, *Wlk.*
Harmatelia, *Wlk.*
discalis, *Wlk.*
bilinea, *Wlk.*

Fam. TELEPHORIDÆ, *Leach.*

Telephorus, *Schäff.*
dimidiatus, *Fabr.*
malthinoides, *Wlk.*
Eugensis, *Westw.*
palpator, *Westw.*
gryphus, *Hope.*
olivaceus, *Hope.*

Fam. CEBRIONIDÆ, *Steph.*

Callirhipis, *Latr.*
Templetonii, *Westw.*
Championii, *Westw.*

Fam. MELYRIDÆ, *Leach.*

Malachius, *Fabr.*
plagiatus, *Wlk.*
Malthinus, *Latr.*
*forticornis, *Wlk.*
*retractus, *Wlk.*
fragilis, *Dohrn.*
Enicopus, *Steph.*
proficiens, *Wlk.*
Honosca, *Wlk.*
necrobioides, *Wlk.*

Fam. CLERIDÆ, *Kirby.*

Cylidrus, *Lap.*
sobrinus, *Dohrn.*
Stigmatium, *Gray.*
elaphroides, *Westw.*
Necrobia, *Latr.*
rufipes, *Fabr.*
aspera, *Wlk.*

Fam. PTINIDÆ, *Leach.*

Ptinus, *Linn.*
*nigerrimus, *Boield.*

Fam. DIAPERIDÆ, *Leach.*

Diaperis, *Geoff.*
velutina, *Wlk.*
fragilis, *Dohrn.*

Fam. TENEBRIONIDÆ, *Leach.*

Zophobas, *Dej.*
errans? *Dej.*
clavipes, *Wlk.*
? solidus, *Wlk.*
Pseudoblaps, *Guer.*
nigrita, *Fabr.*
Tenebrio, *Linn.*
rubripes, *Hope.*
retenta, *Wlk.*
Trachyscelis, *Latr.*
brunnea *Dohrn.*

Fam. Opatridæ, *Shuck.*

Opatrum, *Fabr.*
contrahens, *Wlk.*
bilineatum, *Wlk.*
planatum, *Wlk.*
serricolle, *Wlk.*
Asida, *Latr.*
horrida, *Wlk.*
Crypticus, *Latr.*
detersus, *Wlk.*
longipennis, *Wlk.*
Phaleria, *Latr.*
rufipes, *Wlk.*
Toxicum, *Latr.*
oppugnans, *Wlk.*
biluna, *Wlk.*
Boletophagus, *Ill.*
*morosus, *Dohrn.*
*exasperatus, *Doh.*
Uloma, *Meg.*
scita, *Wlk.*
Alphitophagus, *Steph.*
subfascia, *Wlk.*

Fam. Helopidæ, *Steph.*

Osdara, *Wlk.*
picipes, *Wlk.*
Cholipus, *Dej.*
brevicornis, *Dej.*
parabolicus, *Wlk.*
læviusculus, *Wlk.*
Helops, *Fabr.*
ebeninus, *Wlk.*
Camaria, *Lep. & Serv.*
amethystina. *L. & S.*
Amarygmus, *Dalm.*
chrysomeloides, *Dej.*

Fam. Meloidæ, *Woll.*

Epicauta, *Dej.*
nigrifinis, *Wlk.*
Cissites, *Latr.*
testaceus, *Fabr.*
Mylabris, *Fabr.*
humeralis, *Wlk.*
alterna, *Wlk.*
*recognita, *Wlk.*
Atractocerus, *Pal., Bv.*
debilis, *Wlk.*
reversus, *Wlk.*

Fam. Œdemeridæ, *Steph.*

Cistela, *Fabr.*
congrua, *Wlk.*
*falsifica, *Wlk.*
Allecula, *Fabr.*
fusiformis, *Wlk.*
elegans, *Wlk.*
*flavifemur, *Wlk.*
Sora, *Wlk.*
*marginata, *Wlk.*
Thaccona, *Wlk.*
dimelas, *Wlk.*

Fam. Mordellidæ, *Steph.*

Acosmus, *Dej.*
languidus, *Wlk.*
Rhipiphorus, *Fabr.*
*tropicus, *Niet.*
Mordella, *Linn.*
composita, *Wlk.*
*defectiva, *Wlk.*
Myrmecolax, *Westw.*
*Nietneri, *Westw.*

Fam. Anthicidæ, *Wlk.*

Anthicus, *Payk.*
*quisquilarius, *Niet.*
*insularius, *Niet.*
*sticticollis, *Wlk.*

Fam. Cissidæ, *Leach.*

Cis, *Latr.*
contendens, *Wlk.*

Fam. Tomicidæ, *Shuck.*

Apate, *Fabr.*
submedia, *Wlk.*
Bostrichus, *Geoff.*
mutilatus, *Wlk.*
*vertens, *Wlk.*
*moderatus, *Wlk.*
*testaceus, *Wlk.*
*exiguus, *Wlk.*
Platypus, *Herbst.*
minax, *Wlk.*
solidus, *Wlk.*
*latifinis, *Wlk.*
Hylurgus, *Latr.*
determinans, *Wlk.*
*concinnulus, *Wlk.*
Hylesinus, *Fabr.*
curvifer, *Wlk.*
despectus, *Wlk.*
irresolutus, *Wlk.*

Fam. Curculionidæ, *Leach.*

Bruchus, *Linn.*
scutellaris, *Fabr.*
Spermophagus, *Steven.*
convolvuli, *Thunb.*
figuratus, *Wlk.*
Cisti, *Fabr.*
incertus, *Wlk.*
decretus, *Wlk.*
Dendropemon, *Schön.*
*melancholicus, *Dohrn.*
Dendrotrogus, *Jek.*
Dohrnii, *Jek.*
discrepans, *Dohrn.*
Eucorynus, *Schön.*
colligendus, *Wlk.*
colligens, *Wlk.*
Basitropis, *Jek.*
*disconotatus, *Jek.*
Litocerus, *Schön.*
punctulatus, *Dohrn.*
Tropideres, *Sch.*
punctulifer, *Dohrn.*
fragilis, *Wlk.*
Cedus, *Waterh.*
*cancellatus, *Dohrn.*
Xylinades, *Latr.*
sobrinulus, *Dohrn.*
indignus, *Wlk.*
Xenocerus, *Germ.*
anguliferus, *Wlk.*
revocans, *Wlk.*
*anchoralis, *Dohrn.*
Callistocerus, *Dohrn.*
*Nietneri, *Dohrn.*
Anthribus, *Geoff.*
longicornis, *Fabr.*
apicalis, *Wlk.*
facilis, *Wlk.*
Aræcerus, *Schön.*
coffeæ, *Fabr.*
*insidiosus, *Fabr.*
*musculus, *Dohrn.*
*intangens, *Wlk.*
*bifovea. *Wlk.*
Dipieza, *Pasc.*
*insignis, *Dohrn.*
Apolecta, *Pasc.*
*Nietneri, *Dohrn.*
*musculus, *Dohrn.*
Arrhenodes, *Steven.*
miles, *Sch.*
pilicornis, *Sch.*
dentirostris, *Jek.*
approximans, *Wlk.*
Veneris, *Dohrn.*
Cerobates, *Schön.*
thrasco, *Dohrn.*
aciculatus, *Wlk.*
Ceocephalus, *Schön.*
cavus, *Wlk.*
*reticulatus, *Fabr.*
Nemocephalus, *Latr.*
sulcirostris, *De Haan.*
planicollis, *Wlk.*
spinirostris, *Wlk.*
Apoderus, *Oliv.*
longicollis ? *Fabr.*
tranquebaricus, *Fabr.*
cygneus, *Fabr.* ?
scitulus, *Wlk.*
*triangularis, *Fabr.*
*echinatus, *Sch.*
Rhynchites, *Herbst.*

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suffundens, *Wlk.*
*restituens, *Wlk.*
Apion, *Herbst.*
*Cingalense, *Wlk.*
Strophosomus, *Bilbug.*
*suturalis, *Wlk.*
Piazomias, *Schön.*
æqualis, *Wlk.*
Astycus, *Schön.*
lateralis, *Fabr.*?
ebeninus, *Wlk.*
*immunis, *Wlk.*
Cleonus, *Schön.*
inducens, *Wlk.*
Myllocerus, *Schön.*
transmarinus, *Herbst.*?
spurcatus, *Wlk.*
*retrahens, *Wlk.*
*posticus, *Wlk.*
Phyllobius, *Schön.*
*mimicus, *Wlk.*
Episomus, *Schön.*
pauperatus, *Fabr.*
Lixus, *Fabr.*
nebulifascia, *Wlk.*
Aclees, *Schön.*
cribratus, *Dej.*
Alcides, *Dalm.*
signatus, *Boh.*
obliquus, *Wlk.*
transversus, *Wlk.*
*clausus, *Wlk.*
Acicnemis, *Fairm.*
Ceylonicus, *Jek.*
Apotomorhinus, *Schön.*
signatus, *Wlk.*
alboater, *Wlk.*
Cryptorhynchus, *Illig.*
ineffectus, *Wlk.*
assimilans, *Wlk.*
declaratus, *Wlk.*
notabilis, *Wlk.*
vexatus, *Wlk*
Camptorhinus, *Schön.*?
reversus, *Wlk.*
*indiscretus, *Wlk.*
Desmidophorus, *Chevr.*
hebes, *Fabr.*
communicans, *Wlk.*
stienuus, *Wlk.*
*discriminans, *Wlk.*
inexpertus, *Wlk.*
*fasciculicollis, *Wlk.*
Sipalus, *Schön.*
granulatus, *Fabr.*
porosus, *Wlk.*
tinctus, *Wlk.*
Mecopus, *Dalm.*
*Waterhousei, *Dohrn.*
Rhynchophorus, *Herbst.*
ferrugineus, *Fabr.*
introducens, *Wlk.*

Protocerus, *Schön.*
molossus ? *Oliv.*
Sphænophorus, *Schön.*
glabridiscus, *Wlk.*
exquisitus, *Wlk.*
Dehaani ? *Jek.*
cribricollis, *Wlk.*
? panops, *Wlk.*
Cossonus, *Clairv.*
*quadrimacula, *Wlk.*
? hebes, *Wlk.*
ambiguus, *Sch.*?
Sitophilus, *Schön.*
oryzæ, *Linn.*
disciferus, *Wlk.*
Mecinus, *Germ.*
* ? relictus, *Wlk.*

Fam. PRIONIDÆ, *Leach.*

Trictenotoma, *G.R. Gray.*
Templetoni, *Westw.*
Prionomma, *White.*
orientalis, *Oliv.*
Acanthophorus, *Serv.*
serraticornis, *Oliv.*
Cnemoplites, *Newm.*
Rhesus, *Motch.*
Ægosoma, *Serv.*
Cingalense, *White.*

Fam. CERAMBYCIDÆ, *Kirby.*

Cerambyx, *Linn.*
indutus, *Newm.*
vernicosus, *Pasc.*
consocius, *Pasc.*
versutus, *Pasc.*
nitidus, *Pasc.*
macilentus, *Pasc.*
venustus, *Pasc.*
torticollis, *Dohrn.*
Sebasmia, *Pasc.*
Templetoni, *Pasc.*
Callichroma, *Latr.*
trogoninum, *Pasc.*
telephoroides, *Westw.*
Homalomelas, *White.*
gracilipes, *Parry.*
zonatus, *Pasc.*
Colobus, *Serv.*
Cingalensis, *White.*
Thranius, *Pasc.*
gibbosus, *Pasc.*
Deuteromma, *Pasc.*
mutica, *Pasc.*
Obrium, *Meg.*
laterale, *Pasc.*
mœstum, *Pasc.*
Psilomerus, *Blanch.*
macilentus, *Pasc.*
Clytus, *Fabr.*

vicinus, *Hope.*
ascendens, *Pasc.*
Walkeri, *Pasc.*
annularis, *Fabr.*
*aurilinea, *Dohrn.*
Rhaphuma, *Pasc.*
leucoscutellata, *Hope.*
Ceresium, *Newm.*
cretatum, *White.*
Zeylanicum, *White.*
Stromatium, *Serv.*
barbatum, *Fabr.*
maculatum, *White.*
Hespherophanes, *Muls.*
simplex, *Gyll.*

Fam. LAMIIDÆ, *Kirby.*

Nyphona, *Muls.*
cylindracea, *White.*
Mesosa, *Serv.*
columba, *Pasc.*
Coptops, *Serv.*
bidens, *Fabr.*
Xylorhiza, *Dej.*
adusta, *Wied.*
Cacia, *Newm.*
triloba, *Pasc.*
Batocera, *Blanch.*
rubus, *Fabr.*
ferruginea, *Blanch.*
Monohammus, *Meg.*
fistulator, *Germ.*
crucifer, *Fabr.*
nivosus, *White.*
commixtus, *Pasc.*
Cereopsius, *Dup.*
patronus, *Pasc.*
Pelargoderus, *Serv.*
tigrinus, *Chevr.*
Olenocamptus, *Chevr.*
bilobus, *Fabr.*
Praonetha, *Dej.*
annulata, *Chevr.*
posticalis, *Pasc.*
Apomecyna, *Serv.*
histrio, *Fabr.* var.?
Ropica, *Pasc.*
præusta, *Pasc.*
Hathlia, *Serv.*
procera, *Pasc.*
Iolea, *Pasc.*
proxima, *Pasc.*
histrio, *Pasc.*
Glenea, *Newm.*
sulphurella, *White.*
commissa, *Pasc.*
scapifera, *Pasc.*
vexator, *Pasc.*
Stibara, *Hope.*
nigricornis, *Fabr.*

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Fam. Hispidæ, *Kirby*.
Oncocephala, *Dohrn*.
deltoides, *Dohrn*.
Leptispa, *Baly*.
pygmæa, *Baly*.
Amblispa, *Baly*,
Döhrnii, *Baly*.
Estigmena, *Hope*.
Chinensis, *Hope*.
Hispa, *Linn*.
hystrix, *Fabr*.
erinacea, *Fabr*.
nigrina, *Dohrn*.
*Walkeri, *Baly*.
Platypria, *Guér*.
echidna, *Guér*.

Fam. Cassididæ, *Westw*.
Epistictia, *Boh*.
matronula, *Boh*.
Hoplionota, *Hope*.
tetraspilota, *Baly*.
rubromarginata, *Boh*.
horrifica, *Boh*.
Aspidomorpha, *Hope*.
St. crucis, *Fabr*.
miliaris, *Fabr*.
pallidimarginata, *Baly*
dorsata, *Fabr*.
calligera, *Boh*.
micans, *Fabr*.
Cassida, *Linn*.
clathrata, *Fabr*.
timefacta, *Boh*.
farinosa, *Boh*.
Laccoptera, *Boh*.
14-notata, *Boh*.
Coptocycla, *Chevr*.
sex-notata, *Fabr*.
13-signata, *Boh*.
13-notata, *Boh*.
ornata, *Fabr*.
Ceylonica, *Boh*.
Balyi, *Boh*.
trivittata, *Fabr*.
15-punctata, *Boh*.
catenata, *Dej*.

Fam. Sagridæ, *Kirby*.
Sagra, *Fabr*.
nigrita, *Oliv*.

Fam. Donacidæ, *Lacord*.
Donacia, *Fabr*.
Delesserti, *Guér*.
Coptocephala, *Chev*.
Templetoni, *Baly*.

Fam. Eumolpidæ, *Baly*.
Corynodes, *Hope*.
cyaneus, *Hope*.
æneus, *Baly*.
Glyptoscelis, *Chevr*.
Templetoni, *Baly*.
pyrospilotus, *Baly*.
micans, *Baly*.
cupreus, *Baly*.
Eumolpus, *Fabr*.
lemoides, *Wlk*.

Fam. Cryptocephalidæ, *Kirby*.
Cryptocephalus, *Geoff*.
sex-punctatus, *Fabr*.
Walkeri, *Baly*.
Diapromorpha, *Lac*.
Turcica, *Fabr*.

Fam. Chrysomelidæ, *Leach*.
Chalcolampa, *Baly*.
Templetoni, *Baly*.
Lina, *Meg*.
convexa, *Baly*.
Chrysomela, *Linn*.
Templetoni, *Baly*.

Fam. Galerucidæ, *Steph*.
Galeruca, *Geoff*.
*pectinata, *Dohrn*.
Graptodera, *Chevr*.
cyanea, *Fabr*.
Monolepta, *Chevr*.
pulchella, *Baly*.
Thyamis, *Steph*.
Ceylonicus, *Baly*.

Fam. Coccinellidæ, *Latr*.
Epilachna, *Chevr*.
28-punctata, *Fabr*.
Delessortii, *Guér*.
pubescens, *Hope*.
innuba, *Oliv*.
Coccinella, *Linn*.
tricincta, *Fabr*.
*repanda, *Muls*.
tenuilinea, *Wlk*.
rejiciens, *Wlk*.
interrumpens, *Wlk*.
quinqueplaga, *Wlk*.
simplex, *Wlk*.
antica, *Wlk*.
flaviceps, *Wlk*.
Neda, *Muls*.
tricolor, *Fabr*.
Coelophora, *Muls*.
9-maculata, *Fabr*.?
Chilocorus, *Leach*.
opponens, *Wlk*.
Scymnus, *Kug*.
variabilis, *Wlk*.

Fam. Erotylidæ, *Leach*.
Fatua, *Dej*.
Nepalensis, *Hope*.
Triplax, *Payk*.
decorus, *Wlk*.
Tritoma, *Fabr*.
*bifacies, *Wlk*.
*preposita, *Wlk*.
Ischyrus, *Chevr*.
grandis, *Fabr*.

Fam. Endomychidæ, *Leach*.
Eugonius, *Gerst*.
annularis, *Gerst*.
lunulatus, *Gerst*.
Eumorphus, *Weber*.
pulchripes, *Gerst*.
*tener, *Dohrn*.
Stenotarsus, *Perty*.
Nietneri, *Gerst*.
*castaneus, *Gerst*.
*tomentosus, *Gerst*.
*vallatus, *Gerst*.
Lycoperdina, *Latr*.
glabrata, *Wlk*.
Ancylopus, *Gerst*.
melanocephalus, *Oliv*.
Saula, *Gerst*.
*nigripes, *Gerst*.
*ferruginea, *Gerst*.
Mycetina, *Gerst*.
castanea, *Gerst*.

Order **Orthoptera**, *Linn*.

Fam. Forficulidæ, *Steph*.
Forficula, *Linn*.
———————— ?

Fam. Blattidæ, *Steph*.
Panesthia, *Serv*.
javanica, *Serv*.
plagiata, *Wlk*.
Polyzosteria, *Burm*.
larva.
Corydia, *Serv*.
Petiveriana, *Linn*.

Fam. Mantidæ, *Leach*.
Empusa, *Illig*.
gongylodes, *Linn*.
Harpax, *Serv*.
signifer, *Wlk*.
Schizocephala, *Serv*.
bicornis, *Linn*.
Mantis, *Linn*.
superstitiosa, *Fabr*.
aridifolia, *Stoll*.
extensicollis ? *Serv*.

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Fam. PHASMIDÆ, *Serv.*
Acrophylla, *Gray.*
systropedon, *Westw.*
Phasma, *Licht.*
sordidum, *De Haan.*
Phyllium, *Illig.*
siccifolium, *Linn.*

Fam. GRYLLIDÆ, *Steph.*
Acheta, *Linn.*
bimaculata, *Deg.*
supplicans, *Wlk.*
æqualis, *Wlk.*
confirmata, *Wlk.*
Platydactylus, *Brull.*
crassipes, *Wlk.*
Steirodon, *Serv.*
lanceolatum, *Wlk.*
Phyllophora, *Thunb.*
falsifolia, *Wlk.*
Acanthodis, *Serv.*
rugosa, *Wlk.*
Phaneroptera, *Serv.*
attenuata, *Wlk.*
Phymateus, *Thunb.*
miliaris, *Linn.*
Truxalis, *Linn.*
exaltata, *Wlk.*
porrecta, *Wlk.*
Acridium, *Geoffr.*
extensum, *Wlk.*
deponens, *Wlk.*
rufitibia, *Wlk.*
cinctifemur, *Wlk.*
respondens, *Wlk.*
nigrifascia, *Wlk.*

Order, **Physapoda**, *Dum.*
Thrips, *Linn.*
stenomelas, *Wlk.*

Order, **Neuroptera**, *Linn.*
Fam. SERICOSTOMIDÆ, *Steph.*
Mormonia, *Curt.*
*ursina, *Hagen.*

Fam. LEPTOCERIDÆ, *Leach.*
Macronema, *Pict.*
multifarium, *Wlk.*
*splendidum, *Hagen.*
*nebulosum, *Hagen.*
*obliquum, *Hagen.*
*Ceylanicum, *Niet.*
*annulicorne, *Niet.*
Molanna, *Curt.*
mixta, *Hagen.*
Setodes, *Ramb.*
*Iris, *Hagen.*
*Ino, *Hagen.*

Fam. PSYCHOMIDÆ, *Curt.*
Chimarra, *Leach.*
*auriceps, *Hagen.*
*funesta, *Hagen.*
*sepulcralis, *Hagen.*

Fam. HYDROPSYCHIDÆ, *Curt.*
Hydropsyche, *Pict.*
*Taprobanes, *Hagen.*
*mitis, *Hagen.*

Fam. RHYACOPHILIDÆ, *Steph.*
Rhyacophila, *Pict.*
*castanea, *Hagen.*

Fam. PERLIDÆ, *Leach.*
Perla, *Geoffr.*
angulata, *Wlk.*
*testacea, *Hagen.*
*limosa, *Hagen.*

Fam. SILIADÆ, *Westw.*
Dilar, *Ramb.*
*Nietneri, *Hagen.*

Fam. HEMEROBIDÆ, *Leach.*
Mantispa, *Illig.*
*Indica, *Westw.*
mutata, *Wlk.*
Chrysopa, *Leach.*
invaria, *Wlk.*
*tropica, *Hagen.*
aurifera, *Wlk.*
*punctata, *Hagen.*
Micromerus, *Ramb.*
*linearis, *Hagen.*
*australis, *Hagen.*
Hemerobius, *Linn.*
*frontalis, *Hagen.*
Coniopteryx, *Hal.*
*cerata, *Hagen.*

Fam. MYRMELEONIDÆ, *Leach.*
Palpares, *Ramb.*
contrarius, *Wlk.*
Acanthoclisis, *Ramb.*
*— n. s. *Hagen.*
*molestus, *Wlk.*
Myrmeleon, *Linn.*
gravis, *Wlk.*
dirus, *Wlk.*
barbarus, *Wlk.*
Ascalaphus, *Fabr.*
nugax, *Wlk.*
incusans, *Wlk.*
*cervinus, *Niet.*

Fam. PSOCIDÆ, *Leach.*
Psocus, *Latr.*
*Taprobanes, *Hagen.*
*oblitus, *Hagen.*
*consitus, *Hagen.*
*trimaculatus, *Hagen.*
*obtusus, *Hagen.*
*elongatus, *Hagen.*
*chloroticus, *Hagen.*
*aridus, *Hagen.*
*coleoptratus, *Hagen.*
*dolabratus, *Hagen.*
*infelix, *Hagen.*

Fam. TERMITIDÆ, *Leach.*
Termes, *Linn.*
Taprobanes, *Wlk.*
fatalis, *Kœn.*
monoceros, *Kœn.*
*umbilicatus, *Hagen.*
*n. s. *Jouv.*
*n. s. *Jouv.*

Fam. EMBIDÆ, *Hagen.*
Oligotoma, *Westw.*
*Saundersii, *Westw.*

Fam. EPHEMERIDÆ, *Leach.*
Bætis, *Leach.*
Taprobanes, *Wlk.*
Potamanthus, *Pict.*
*fasciatus, *Hagen.*
*annulatus, *Hagen.*
*femoralis, *Hagen.*
Cloe, *Burm.*
*tristis, *Hagen.*
*consueta, *Hagen.*
*solida, *Hagen.*
*sigmata, *Hagen.*
*marginalis, *Hagen.*
Cænis, *Steph.*
perpusilla, *Wlk.*

Fam. LIBELLULIDÆ.
Calopteryx, *Leach.*
chinensis, *Linn.*
Euphœa, *Selys.*
splendens, *Hagen.*
Micromerus, *Ramb.*
lineatus, *Burm.*
Trichocnemys, *Selys.*
*serapica, *Hagen.*
Lestes, *Leach.*
*elata, *Hagen.*
*gracilis, *Hagen.*

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Agrion, *Fabr.*
*Coromandelianum, *F.*
*tenax, *Hagen.*
*hilare, *Hagen.*
*velare, *Hagen.*
*delicatum, *Hagen.*
Gynacantha, *Ramb.*
subinterrupta, *Ramb.*
Epophthalmia, *Burm.*
vittata, *Burm.*
Zyxomma, *Ramb.*
petiolatum, *Ramb.*
Acisoma, *Ramb.*
panorpoides, *Ramb.*
Libellula, *Linn.*
Marcia, *Drury.*
Tillarga, *Fabr.*
variegata, *Linn.*
flavescens, *Fabr.*
Sabina, *Drury.*
viridula, *Pal. Beauv.*
congener, *Ramb.*
soror, *Ramb.*
Aurora, *Burm.*
violacea, *Niet.*
perla, *Hagen.*
sanguinea, *Burm.*
trivialis, *Ramb.*
contaminata, *Fabr.*
equestris, *Fabr.*
nebulosa, *Fabr.*

Order, **Hymenoptera,** *Linn.*

Fam. Formicidæ, *Leach.*

Formica, *Linn.*
smaragdina, *Fabr.*
mitis, *Smith.*
*Taprobane, *Smith.*
*variegata, *Smith.*
*exercita, *Wlk.*
*exundans, *Wlk.*
*meritans, *Wlk.*
*latebrosa, *Wlk.*
*pangens, *Wlk.*
*ingruens, *Wlk*
*detorquens, *Wlk.*
*diffidens, *Wlk.*
*obscurans, *Wlk.*
*indeflexa, *Wlk.*
consultans, *Wlk.*
Polyrhachis, *Smith.*
*illaudatus, *Wlk.*

Fam. Poneridæ, *Smith.*

Odontomachus, *Latr.*
simillimus, *Smith.*
Typhlopone, *Westw.*
Curtisii, *Shuck.*

Myrmica, *Latr.*
basalis, *Smith.*
contigua, *Smith.*
glyciphila, *Smith.*
*consternens, *Wlk.*
Crematogaster, *Lund.*
*pellens, *Wlk*
*deponens, *Wlk.*
*forticulus, *Wlk.*
Pseudomyrma, *Guré.*
*atrata, *Smith.*
allaborans, *Wlk.*
Atta, *St. Farg.*
didita, *Wlk.*
Pheidole, *Westw.*
Janus, *Smith.*
*Taprobanæ, *Smith.*
*rugosa, *Smith.*
Meranoplus, *Smith.*
*dimicans, *Wlk.*
Cataulacus, *Smith.*
Taprobanæ, *Smith.*

Fam. Mutillidæ, *Leach.*

Mutilla, *Linn.*
*Sibylla, *Smith.*
Tiphia, *Fabr.*
*decrescens, *Wlk.*

Fam. Eumenidæ, *Westw.*

Odynerus, *Latr.*
*tinctipennis, *Wlk.*
*intendens, *Wlk.*
Scolia, *Fabr.*
auricollis, *St. Farg.*

Fam. Crabronidæ, *Leach.*

Philanthus, *Fabr.*
basalis, *Smith.*
Stigmus, *Jur.*
*congruus, *Wlk.*

Fam. Sphegidæ, *Steph.*

Ammophila, *Kirby.*
atripes, *Smith.*
Pelopæus, *Latr.*
Spinolæ, *St. Farg.*
Sphex, *Fabr.*
ferruginea, *St. Farg.*
Ampulex, *Jur.*
compressa, *Fabr.*

Fam. Larridæ, *Steph.*

Larrada, *Smith.*
*extensa, *Wlk.*

Fam. Pompilidæ, *Leach.*

Pompilus, *Fabr.*
analis, *Fabr.*

Fam. Apidæ, *Leach.*

Andrena, *Fabr.*
*exagens, *Wlk.*
Nomia, *Latr.*
rustica, *Westw.*
*vincta, *Wlk.*
Allodaps, *Smith.*
*marginata, *Smith.*
Ceratina, *Latr.*
viridis, *Guér.*
picta, *Smith.*
*simillima, *Smith.*
Cœlioxys, *Latr.*
capitata, *Smith.*
Crocisa, *Jur.*
*ramosa, *St. Farg.*
Stelis, *Panz.*
carbonaria, *Smith.*
Anthophora, *Latr.*
zonata, *Smith.*
Xylocopa, *Latr.*
tenuiscapa, *Westw.*
latipes, *Drury.*
Apis, *Linn.*
indica, *Smith.*
Trigona, *Jur.*
iridipennis, *Smith.*
*præterita, *Wlk.*

Fam. Chrysidæ, *Wlk.*

Stilbum, *Spin.*
splendidum, *Dahl.*

Fam. Dorylidæ, *Shuck.*

Enictus, *Shuck.*
porizonoides, *Wlk.*

Fam. Ichneumonidæ, *Leach.*

Cryptus, *Fabr.*
*onustus, *Wlk.*
Hemiteles ? *Grav.*
*varius, *Wlk.*
Porizon, *Fall.*
*dominans, *Wlk.*
Pimpla, *Fabr.*
albopicta, *Wlk.*

Fam. Braconidæ, *Hal.*

Microgaster, *Latr.*
*recusans, *Wlk.*
*significans, *Wlk.*
*subducens, *Wlk.*
*detracta, *Wlk.*
Spathius, *Nees.*
*bisignatus, *Wlk.*
*signipennis, *Wlk.*
Heratemis, *Wlk.*
*filosa, *Wlk.*

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Nebartha, *Wlk.*
*macropoides, *Wlk.*
Psyttalia, *Wlk.*
*testacea, *Wlk.*

Fam. CHALCIDIÆ, *Spin.*

Chalcis, *Fabr.*
*dividens, *Wlk.*
*pandens, *Wlk.*
Halticella, *Spin.*
*rufimanus, *Wlk.*
*inficiens, *Wlk.*
Dirrhinus, *Dalm.*
*Anthracia, *Wlk.*
Eurytoma, *Ill.*
*contraria, *Wlk.*
*indefensa, *Wlk.*
Eucharis, *Latr.*
*convergens, *Wlk.*
*deprivata, *Wlk.*
Pteromalus, *Swed.*
*magniceps, *Wlk.*
Encyrtus, *Latr.*
*obstructus, *Wlk.*

Fam. DIAPRIDÆ, *Hal.*

Diapria, *Latr.*
apicalis, *Wlk.*

Order, **Lepidoptera,** *Linn.*

Fam. PAPILIONIDÆ, *Leach.*

Ornithoptera, *Boisd.*
Darsius, *G. R. Gray.*
Papilio, *Linn.*
Diphilus, *Esp.*
Jophon, *G. R. Gray.*
Hector, *Linn.*
Romulus, *Cram.*
Polymnestor, *Cram.*
Crino, *Fabr.*
Helenus, *Linn.*
Pammon, *Linn.*
Polytes, *Linn.*
Erithonius, *Cram.*
Antipathis, *Cram.*
Agamemnon, *Linn.*
Eurypilus, *Linn.*
Bathycles, *Zinck-Som.*
Sarpedon, *Linn.*
dissimilis, *Linn.*
Pontia, *Fabr.*
Nina, *Fabr.*
Pieris, *Schr.*
Eucharis, *Drury.*
Coronis, *Cram.*
Epicharis, *Godt.*
Nama, *Doubl.*
Remba, *Moore.*
Mesentina, *Godt.*
Severina, *Cram.*
Namouna, *Doubl.*
Phryne, *Fabr.*
Paulina, *Godt.*
Thestylis, *Doubl.*
Callosune, *Doubl.*
Eucharis, *Fabr.*
Danaë, *Fabr.*
Etrida, *Boisd.*
Idmais, *Boisd.*
Calais, *Cram.*
Thestias, *Boisd.*
Mariamne, *Cram.*
Pirene, *Linn.*
Hebomoia, *Hübn.*
Glaucippe, *Linn.*
Eronia, *Hübn.*
Valeria, *Cram.*
Callidryas, *Boisd.*
Phillipina, *Boisd.*
Pyranthe, *Linn.*
Hilaria, *Cram.*
Alcmeone, *Cram.*
Thisorella, *Boisd.*
Terias, *Swain.*
Drona, *Horsf.*
Hecabe, *Linn.*

Fam. NYMPHALIDÆ, *Swain.*

Euplœa, *Fabr.*
Prothoe, *Godt.*
Core, *Cram.*
Alcathoë, *Godt.*
Danais, *Latr.*
Chrysippus, *Linn.*
Plexippus, *Linn.*
Aglae, *Cram.*
Melissa, *Cram.*
Limniacæ, *Cram.*
Juventa, *Cram.*
Hestia, *Hübn.*
Jasonia, *Westw.*
Telchinia, *Hübn.*
violæ, *Fabr.*
Cethosia, *Fabr.*
Cyane, *Fabr.*
Messarus, *Doubl.*
Erymanthis, *Drury.*
Atella, *Doubl.*
Phalanta, *Drury.*
Argynnis, *Fabr.*
Niphe, *Linn.*
Clagia, *Godt.*
Ergolis, *Boisd.*
Taprobana, *West.*
Vanessa, *Fabr.*
Charonia, *Drury.*
Libythea, *Fabr.*
Medhavina, *Wlk.*
Pushcara, *Wlk.*
Pyrameis, *Hübn.*
Charonia, *Drury.*
Cardui, *Linn.*
Callirhoë, *Hübn.*
Junonia, *Hübn.*
Limonias, *Linn.*
Œnone, *Linn.*
Orithyia, *Linn.*
Laomedia, *Linn.*
Asterie, *Linn.*
Precis, *Hübn.*
Iphita, *Cram.*
Cynthia, *Fabr.*
Arsinoe, *Cram.*
Parthenos, *Hübn.*
Gambrisius, *Fabr.*
Limenitis, *Fabr.*
Calidusa, *Moore.*
Neptis, *Fabr.*
Heliodore, *Fabr.*
Columella, *Cram.*
aceris, *Fabr.*
Jumbah, *Moore.*
Hordonia, *Stoll.*
Diadema, *Boisd.*
Auge, *Cram.*
Bolina, *Linn.*
Symphædra, *Hübn.*
Thyelia, *Fabr.*
Adolias, *Boisd.*
Evelina, *Stoll.*
Lubentina, *Fabr.*
Vasanta, *Moore.*
Garuda, *Moore.*
Nymphalis, *Latr.*
Psaphon, *Westw.*
Bernardus, *Fabr.*
Athamas, *Cram.*
Fabius, *Fabr.*
Kallima, *Doubl.*
Philarchus, *Westw.*
Melanitis, *Fabr.*
Banksia, *Fabr.*
Leda, *Linn.*
Casiphone, *G. R. Gray.*
undularia, *Boisd.*
Ypthima, *Hübn.*
Lysandra, *Cram.*
Parthalis, *Wlk.*
Cyllo, *Boisd.*
Gorya, *Wlk.*
Cathæna, *Wlk.*
Embolima, *Wlk.*
Neilgherriensis, *Guér.*
Purimata, *Wlk.*
Pushpamitra, *Wlk.*
Mycalesis, *Hübn.*
Patnia, *Moore.*
Gamaliba, *Wlk.*
Dosaron, *Wlk.*
Samba, *Moore.*
Cænonympha, *Hübn.*

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Euaspla, *Wlk.*
Emesis, *Fabr.*
Echerius, *Stoll.*

Fam. LYCÆNIDÆ, *Leach.*

Anops, *Boisd.*
Bulis, *Boisd.*
Thetys, *Drury.*
Loxura, *Horsf.*
Atymnus, *Cram.*
Myrina, *Godt.*
Selimnus, *Doubled.*
Triopas, *Cram.*
Amblypodia, *Horsf.*
Longinus, *Fabr.*
Narada, *Horsf.*
Pseudocentaurus, *Do.*
quercetorum, *Boisa.*
Aphnæus, *Hübn.*
Pindarus, *Fabr.*
Etolus, *Cram.*
Hephæstos, *Doubled.*
Crotus, *Doubled.*
Dipsas, *Doubled.*
Chrysomallos, *Hübn.*
Isocrates, *Fabr.*
Lycæna, *Fabr.*
Alexis, *Stoll.*
Bœtica, *Linn.*
Cnejus, *Horsf.*
Rosimon, *Fabr.*
Theophrastus, *Fabr.*
Pluto, *Fabr.*
Parana, *Horsf.*
Nyseus, *Guér.*
Ethion, *Boisd.*
Celeno, *Cram.*
Kandarpa, *Horsf.*
Elpis, *Godt.*
Chimonas, *Wlk.*
Gandara, *Wlk.*
Chorienis, *Wlk.*
Geria, *Wlk.*
Doanas, *Wlk.*
Sunya, *Wlk.*
Audhra, *Wlk.*
Polyommatus, *Latr.*
Akasa, *Horsf.*
Puspa, *Horsf.*
Laius, *Cram.*
Ethion, *Boisd.*
Cattigara, *Wlk.*
Gorgippia, *Wlk.*
Lucia, *Westw.*
Epius, *Westw.*
Pithecops, *Horsf.*
Hylax, *Fabr.*

Fam. HESPERIDÆ, *Steph.*

Goniloba, *Westw.*
Iapetus, *Cram.*
Pyrgus, *Hübn.*
Superna, *Moore.*
Danna, *Moore.*
Genta, *Wlk.*
Sydrus, *Wlk.*
Nisoniades, *Hübn.*
Diocles, *Boisd.*
Salsala, *Moore.*
Toides, *Wlk.*
Pamphila, *Fabr.*
Augias, *Linn*
Achylodes, *Hübn.*
Temala, *Wlk.*
Hesperia, *Fabr.*
Indrani, *Moore.*
Chaya, *Moore.*
Cinnara, *Moore.*
Gremius, *Latr.*
Cendochates, *Wlk.*
Tiagara, *Wlk.*
Cotiaris, *Wlk.*
Sigala, *Wlk.*

Fam. SPHINGIDÆ, *Leach.*

Sesia, *Fabr.*
Hylas, *Linn*
Macroglossa, *Ochs.*
Stellatarum, *Linn.*
Gyrans, *Boisd.*
Corythus, *Boisd.*
divergens, *Wlk.*
Calymnia, *Boisd.*
Panopus, *Cram.*
Chœrocampa, *Dup.*
Thyelia, *Linn.*
Nyssus, *Drury.*
Clotho, *Drury.*
Oldenlandiæ, *Fabr.*
Lycetus, *Cram.*
Silhetensis, *Boisd.*
Pergesa, *Wlk.*
Acteus, *Cram.*
Panacra, *Wlk.*
vigil, *Guer.*
Daphnis, *Hübn.*
Nerii, *Linn.*
Zonilia, *Boisd*
Morpheus, *Cram.*
Macrosila, *Boisd.*
obliqua, *Wlk.*
discistriga, *Wlk.*
Sphinx, *Linn.*
convolvuli, *Linn.*
Acherontia, *Ochs.*
Satanas, *Boisd.*
Smerinthus, *Latr.*
Dryas, *Boisd.*

Fam. CASTNIIDÆ, *Wlk.*

Eusemia, *Dalm.*
bellatrix, *Westw.*
Ægocera, *Latr.*
Venulia, *Cram.*
bimacula, *Wlk.*

Fam. ZYGÆNIDÆ, *Leach.*

Syntomis, *Ochs.*
Schœnherri, *Boisd.*
Creusa, *Linn.*
Imaon, *Cram.*
Glaucopis, *Fabr.*
subaurata, *Wlk.*
Euchromia, *Hübn.*
Polymena, *Cram.*
diminuta, *Wlk.*

Fam. LITHOSIIDÆ, *Steph.*

Scaptesyle, *Wlk.*
bicolor, *Wlk.*
Nyctemera, *Hübn.*
lacticinia, *Cram.*
latistriga, *Wlk.*
Coleta, *Cram.*
Euschema, *Hübn.*
subrepleta, *Wlk.*
transversa, *Wlk.*
vilis, *Wlk.*
Chalcosia, *Hübn.*
Tiberina, *Cram.*
venosa, *Anon.*
Eterusia, *Hope.*
Ædea, *Linn.*
Trypanophora, *Koll.*
Taprobanes, *Wlk.*
Heteropan, *Wlk.*
scintillans, *Wlk.*
Hypsa, *Hübn.*
plana, *Wlk.*
caricæ, *Fabr.*
ficus, *Fabr.*
Vitessa, *Moor.*
Zemire, *Cram.*
Lithosia, *Fabr.*
antica, *Wlk.*
brevipennis, *Wlk.*
Setina, *Schr.*
semifascia, *Wlk.*
solita, *Wlk.*
Doliche, *Wlk.*
hilaris, *Wlk.*
Pitane, *Wlk.*
conserta, *Wlk.*
Æmene, *Wlk.*
Taprobanes, *Wlk.*
Dirades, *Wlk.*
attacoidea, *Wlk.*
Cyllene, *Wlk.*
transversa, *Wlk.*
*spoliata, *Wlk.*
Bizone, *Wlk.*
subornata, *Wlk.*
peregrina, *Wlk.*

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Deiopeia, *Steph.*
pulchella, *Linn.*
Astrea, *Drury.*
Argus, *Kollar.*

Fam. ARCTIIDÆ, *Leach.*

Alope, *Wlk.*
ocellifera, *Wlk.*
Sangarida, *Cram.*
Tinolius, *Wlk.*
eburneigutta, *Wlk.*
Creatonotos, *Hübn.*
interrupta, *Linn.*
emittens, *Wlk.*
Acmonia, *Wlk.*
lithosioides, *Wlk.*
Spilosoma, *Steph.*
subfascia, *Wlk.*
Cycnia, *Hübn.*
rubida, *Wlk.*
sparsigutta, *Wlk.*
Anthena, *Wlk.*
discalis, *Wlk.*
Aloa, *Wlk.*
lactinea, *Cram.*
candidula, *Wlk.*
erosa, *Wlk.*
Amerila, *Wlk.*
Melanthus, *Cram.*
Ammatho, *Wlk.*
cunionotatus, *Wlk.*

Fam. LIPARIDÆ, *Wlk.*

Artaxa, *Wlk.*
guttata, *Wlk.*
*varians, *Wlk.*
atomaria, *Wlk.*
Acyphas, *Wlk.*
viridescens, *Wlk.*
Lacida, *Wlk.*
rotundata, *Wlk.*
antica, *Wlk.*
subnotata, *Wlk.*
complens, *Wlk.*
promittens, *Wlk.*
strigulifera, *Wlk.*
Amsacta ? *Wlk.*
tenebrosa, *Wlk.*
Antipha, *Wlk.*
costalis, *Wlk.*
Anaxila, *Wlk.*
notata, *Wlk.*
Procodeca, *Wlk.*
angulifera, *Wlk.*
Redoa, *Wlk.*
submarginata, *Wlk.*
Euproctis, *Hübn.*
virguncula, *Wlk.*
bimaculata, *Wlk.*
lunata, *Wlk.*
tinctifera, *Wlk.*
Cispia, *Wlk.*
plagiata, *Wlk.*
Dasychira, *Hübn.*
pudibunda, *Linn.*
Lymantria, *Hübn.*
grandis, *Wlk.*
marginata, *Wlk.*
Enome, *Wlk.*
ampla, *Wlk.*
Dreata, *Wlk.*
plumipes, *Wlk.*
geminata, *Wlk.*
mutans, *Wlk.*
mollifera, *Wlk.*
Pandala, *Wlk.*
dolosa, *Wlk.*
Charnidas, *Wlk.*
junctifera, *Wlk.*

Fam PSYCHIDÆ, *Bru.*

Psyche, *Schr.*
Doubledaii, *Westw.*
Metisa, *Wlk.*
plana, *Wlk.*
Eumeta, *Wlk.*
Cramerii, *Westw.*
Templetonii, *Westw.*
Cryptothelea, *Templ.*
consorta, *Templ.*

Fam. NOTODONTIDÆ, *St.*

Cerura, *Schr.*
liturata, *Wlk.*
Sauropus, *Germ.*
alternans, *Wlk.*
Nioda, *Wlk.*
fusiformis, *Wlk.*
transversa, *Wlk.*
Rilia, *Wlk.*
lanceolata, *Wlk.*
basivitta, *Wlk.*
Ptilomacra, *Wlk.*
juvenis, *Wlk.*
Elavia, *Wlk.*
metaphæa, *Wlk.*
Notodonta, *Ochs.*
ejecta, *Wlk.*
Ichthyura, *Hübn.*
restituens, *Wlk.*

Fam. LIMACODIDÆ, *Dup.*

Scopelodes, *Westw.*
unicolor, *Westw.*
Messata, *Wlk.*
rubiginosa, *Wlk.*
Miresa, *Wlk.*
argentifera, *Wlk.*
aperiens, *Wlk.*
Nyssia, *Herr. Sch.*
læta, *Westw.*
Neæra, *Herr. Sch.*
graciosa, *Westw.*
Narosa, *Wlk.*
conspersa, *Wlk.*
Naprepa, *Wlk.*
varians, *Wlk.*

Fam. DREPANULIDÆ, *Wlk.*

Oreta, *Wlk.*
suffusa, *Wlk.*
extensa, *Wlk.*
Arna, *Wlk.*
apicalis, *Wlk.*
Ganisa, *Wlk.*
postica, *Wlk.*

Fam. SATURNIIDÆ, *Wlk.*

Attacus, *Linn.*
Atlas, *Linn.*
lunula, *Anon.*
Antheræa, *Hübn.*
Mylitta, *Drury.*
Assama, *Westw.*
Tropæa, *Hübn.*
Selene, *Hübn.*

Fam. BOMBYCIDÆ, *Steph.*

Trabala, *Wlk.*
basalis, *Wlk.*
prasina, *Wlk.*
Lasiocampa, *Schr.*
trifascia, *Wlk.*
Megasoma, *Boisd.*
venustum, *Wlk.*
Lebeda, *Wlk.*
repanda, *Wlk.*
plagiata, *Wlk.*
bimaculata, *Wlk.*
scriptiplaga, *Wlk.*

Fam. COSSIDÆ, *Newm.*

Cossus, *Fabr.*
quadrinotatus, *Wlk.*
Zeuzera, *Latr.*
leuconota, *Steph.*
pusilla, *Wlk.*

Fam. HEPIALIDÆ, *Steph.*

Phassus, *Steph.*
signifer, *Wlk.*

Fam. CYMATOPHORIDÆ, *Herr. Sch.*

Thyatira, *Ochs.*
repugnans, *Wlk.*

Fam. BRYOPHILIDÆ, *Guén.*

Bryophila, *Treit.*
semipars, *Wlk.*

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Fam. Bombycoidæ, *Guén.*
Diphtera, *Ochs.*
deceptura, *Wlk.*

Fam. Leucanidæ, *Guén.*
Leucania, *Ochs.*
confusa, *Wlk.*
exempta, *Wlk.*
inferens, *Wlk.*
collecta, *Wlk.*
Brada, *Wlk.*
truncata, *Wlk.*
Crambopsis, *Wlk.*
excludens, *Wlk.*

Fam. Glottulidæ, *Guén.*
Polytela, *Guén.*
gloriosa, *Fabr.*
Glottula, *Guén.*
Dominica, *Cram.*
Chasmina, *Wlk.*
pavo, *Wlk.*
cygnus, *Wlk.*

Fam. Apamidæ, *Guén.*
Laphygma, *Guén.*
obstans, *Wlk.*
trajiciens, *Wlk.*
Prodenia, *Guén.*
retina, *Friv.*
glaucistriga, *Wlk.*
apertura, *Wlk.*
Calogramma, *Wlk.*
festiva, *Don.*
Heliophobus, *Boisd.*
discrepans, *Wlk.*
Hydræcia, *Guén.*
lampadifera, *Wlk.*
Apamea, *Ochs.*
undecilia, *Wlk.*
Celæna, *Steph.*
serva, *Wlk.*

Fam. Caradrinidæ, *Guén.*
Amyna, *Guén.*
selenampha, *Guén.*

Fam. Noctuidæ, *Guén.*
Agrotis, *Ochs.*
aristifera, *Guér.*
congrua, *Wlk.*
punctipes, *Wlk.*
mundata, *Wlk.*
transducta, *Wlk.*
plagiata, *Wlk.*
plagifera, *Wlk.*

Fam. Hadenidæ, *Guén.*
Eurois, *Hübn.*
auriplena, *Wlk.*
inclusa, *Wlk.*
Epiceia, *Wlk.*
subsignata, *Wlk.*
Hadena, *Treit.*
subcurva, *Wlk.*
postica, *Wlk.*
retrahens, *Wlk.*
confundens, *Wlk.*
congressa, *Wlk.*
ruptistriga, *Wlk.*
Ansa, *Wlk.*
filipalpis, *Wlk.*

Fam. Xylinidæ, *Guén.*
Ragada, *Wlk.*
pyrorchroma, *Wlk.*
Cryassa, *Wlk.*
bifacies, *Wlk.*
Egelista, *Wlk.*
rudivitta, *Wlk.*
Xylina, *Ochs.*
deflexa, *Wlk.*
inchoans, *Wlk.*

Fam. Heliothidæ, *Guén.*
Heliothis, *Ochs.*
armigera, *Hübn.*

Fam. Hæmerosidæ, *Guén.*
Ariola, *Wlk.*
cœlisigna, *Wlk.*
dilectissima, *Wlk.*
saturata, *Wlk.*

Fam. Acontidæ, *Guén.*
Xanthodes, *Guén.*
intersepta, *Guén.*
Acontia, *Ochs.*
tropica, *Guén.*
olivacea, *Wlk.*
fasciculosa, *Wlk.*
signifera, *Wlk.*
turpis, *Wlk.*
mianöides, *Wlk.*
approximans, *Wlk.*
divulsa, *Wlk.*
*egens, *Wlk.*
plenicosta, *Wlk.*
determinata, *Wlk.*
hypætroides, *Wlk.*
Chlumetia, *Wlk.*
multilinea, *Wlk.*

Fam. Anthophilidæ, *Guén.*
Micra, *Guén.*
destituta, *Wlk.*
derogata, *Wlk.*
simplex, *Wlk.*

Fam. Eriopidæ, *Guén.*
Callopistria, *Hübn.*
exotica, *Guén.*
rivularis, *Wlk.*
duplicans, *Wlk.*

Fam. Eurhipidæ, *Guén.*
Penicillaria, *Guén.*
nugatrix, *Guén.*
resoluta, *Wlk.*
solida, *Wlk.*
ludatrix, *Wlk.*
Rhesala, *Wlk.*
imparata, *Wlk.*
Eutelia, *Hübn.*
favillatrix, *Wlk.*
thermesiides, *Wlk.*

Fam. Plusidæ, *Boisd.*
Abrostola, *Ochs.*
transfixa, *Wlk.*
Plusia, *Ochs.*
aurifera, *Hübn.*
verticillata, *Guén.*
agramma, *Guén.*
obtusisigna, *Wlk.*
nigriluna, *Wlk.*
signata, *Wlk.*
dispellens, *Wlk.*
propulsa, *Wlk.*

Fam. Calpidæ, *Guén.*
Calpe, *Treit.*
minuticornis, *Guén.*
Orœsia, *Guén.*
emarginata, *Fabr.*
Deva, *Wlk.*
conducens, *Wlk.*

Fam. Hemiceridæ, *Guén.*
Westermannia, *Hübn.*
superba, *Hübn.*

Fam. Hyblæidæ, *Guén.*
Hyblæa, *Guén.*
Puera, *Cram.*
constellata, *Guén.*
Nolasena, *Wlk.*
ferrifervens, *Wlk.*

Fam. Gonopteridæ, *Guén.*
Cosmophila, *Boisd.*
Indica, *Guén.*
xanthindyma, *Boisd.*
Anomis, *Hübn.*
fulvida, *Guén.*
iconica, *Wlk.*
Gonitis, *Guén.*
combinans, *Wlk.*
albitibia, *Wlk.*
mesogona, *Wlk.*
guttanivis, *Wlk.*
involuta, *Wlk.*

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basalis, *Wlk.*
Eporedia, *Wlk.*
damnipennis, *Wlk.*
Rusicada, *Wlk.*
nigritarsis, *Wlk.*
Pasipeda, *Wlk.*
rufipalpis, *Wlk.*

Fam. TOXOCAMPIDÆ, *Guén.*

Toxocampa, *Guén.*
metaspila, *Wlk.*
sexlinea, *Wlk.*
quinquelina, *Wlk.*
Albonica, *Wlk.*
reversa, *Wlk.*

Fam. POLYDESMIDÆ, *Guén.*

Polydesma, *Boisd.*
boarmoides, *Wlk.*
erubescens, *Wlk.*

Fam. HOMOPTERIDÆ, *Bois.*

Alamis, *Guén.*
spoliata, *Wlk.*
Homoptera, *Boisd.*
basipallens, *Wlk.*
retrahens, *Wlk.*
costifera, *Wlk.*
divisistriga, *Wlk.*
procumbens, *Wlk.*
Diacuista, *Wlk.*
homopteroides, *Wlk.*
Daxata, *Wlk.*
bijungens, *Wlk.*

Fam. HYPOGRAMMIDÆ, *Guén.*

Briarda, *Wlk.*
precedens, *Wlk.*
Brana, *Wlk.*
calopasa, *Wlk.*
Corsa, *Wlk.*
lignicolor, *Wlk.*
Avatha, *Wlk.*
includens, *Wlk.*
Gadirtha, *Wlk.*
decrescens, *Wlk.*
impingens, *Wlk.*
spurcata, *Wlk.*
rectifera, *Wlk.*
duplicans, *Wlk.*
intrusa, *Wlk.*
Ercheia, *Wlk.*
diversipennis, *Wlk.*
Plotheia, *Wlk.*
frontalis, *Wlk.*
Diomea, *Wlk.*
rotundata, *Wlk.*
chloromela, *Wlk.*

orbicularis, *Wlk.*
muscosa, *Wlk*
Dinumma, *Wlk.*
placens, *Wlk.*
usia, *Wlk.*
geometroides, *Wlk.*
perficita, *Wlk.*
repulsa, *Wlk.*
Abunis, *Wlk.*
trimesa, *Wlk.*

Fam. CATEPHIDÆ, *Guén.*

Cocytodes, *Guén.*
cœrula, *Guén.*
modesta, *Wlk.*
Catephia, *Ochs.*
linteola, *Guén.*
Anophia, *Guén.*
acronyctoides, *Guén.*
Steiria, *Wlk.*
subobliqua, *Wlk.*
trajiciens, *Wlk.*
Aucha, *Wlk.*
velans, *Wlk.*
Ægilia, *Wlk.*
describens, *Wlk.*
Maceda, *Wlk.*
mansueta, *Wlk.*

Fam. HYPOCALIDÆ, *Guén.*

Hypocala, *Guén.*
efflorescens, *Guén.*
subsatura, *Guén.*

Fam. CATOCALIDÆ, *Boisd.*

Blenina, *Wlk.*
donans, *Wlk.*
accipiens, *Wlk.*

Fam. OPHIDERIDÆ, *Guén.*

Ophideres, *Boisd.*
Materna, *Linn.*
fullonica, *Linn.*
Cajeta, *Cram*
Ancilla, *Cram.*
Salaminia, *Cram.*
Hypermnestra, *Cram.*
multiscripta, *Wlk.*
bilineosa, *Wlk.*
Potamophera, *Guén.*
Manlia, *Cram.*
Lygniodes, *Guén.*
reducens, *Wlk.*
disparans, *Wlk.*
hypoleuca, *Guén.*

Fam. EREBIDÆ, *Guén.*

Oxyodes, *Guén.*
Clytia, *Cram.*

Fam. OMMATOPHORIDÆ, *Guén.*

Speiredonia, *Hübn.*
retrahens, *Wlk.*
Sericia, *Guén.*
anops, *Guén.*
parvipennis, *Wlk.*
Patula, *Guén.*
macrops, *Linn.*
Argiva, *Hübn.*
hieroglyphica, *Drury.*
Beregra, *Wlk.*
replenens, *Wlk.*

Fam. HYPOPYRIDÆ, *Guén.*

Spiramia, *Guén.*
Heliconia, *Hübn.*
triloba, *Guén.*
Hypopyra, *Guén.*
vespertilio, *Fabr.*
Ortospana, *Wlk.*
connectens, *Wlk.*
Entomogramma, *Guén.*
fautrix, *Guén.*

Fam. BENDIDÆ, *Guén.*

Homæa, *Guén.*
clathrum, *Guén.*
Hulodes, *Guén.*
caranea, *Cram.*
palumba, *Guén.*

Fam. OPHIUSIDÆ, *Guén.*

Sphingomorpha, *Guén.*
Chlorea, *Cram.*
Lagoptera, *Guén.*
honesta, *Hübn.*
magica, *Hübn.*
dotata, *Fabr.*
Ophiodes, *Guén.*
discriminans, *Wlk.*
basistigma, *Wlk.*
Cerbia, *Wlk.*
fugitiva, *Wlk.*
Ophisma, *Guén.*
lætabilis, *Guén.*
deficiens, *Wlk.*
gravata, *Wlk.*
circumferens, *Wlk.*
terminans, *Wlk.*
Achæa, *Hübn.*
Melicerta, *Drury.*
Mezentia, *Cram.*
Cyllota, *Guén.*
Cyllaria, *Cram.*
fusifera, *Wlk.*
signivitta, *Wlk.*
reversa, *Wlk.*
combinans, *Wlk.*
expectans, *Wlk.*

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Serrodes, *Guén.*
campana, *Guén.*
Naxia, *Guén.*
absentimacula, *Guén.*
Onelia, *Guén.*
calefaciens, *Wlk.*
calorifica, *Wlk.*
Calesia, *Guén.*
hœmorrhoda, *Guén.*
Hypætra, *Guén.*
trigonifera, *Wlk.*
curvifera, *Wlk.*
condita, *Wlk.*
complacens, *Wlk.*
divisa, *Wlk.*
Ophiusa, *Ochs.*
myops, *Guén.*
albivitta, *Guén.*
Achatina, *Sulz.*
fulvotænia, *Guén.*
simillima, *Guén.*
festinata, *Wlk.*
pallidilinea, *Wlk.*
luteipalpis, *Wlk.*
Fodina, *Guén.*
stola, *Guén.*
Grammodes, *Guén.*
Ammonia, *Cram.*
Mygdon, *Cram.*
stolida, *Fabr.*
mundicolor, *Wlk.*

Fam. EUCLIDIDÆ. *Guén.*

Trigonodes, *Guén.*
Hippasia, *Cram.*

Fam. REMIGIDÆ, *Guén.*

Remigia, *Guén.*
Archesia, *Cram.*
frugalis, *Fabr.*
pertendens, *Wlk.*
congregata, *Wlk.*
opturata, *Wlk.*

Fam. FOCILLIDÆ, *Guén.*

Focilla, *Guén.*
submemorans, *Wlk.*

Fam. AMPHIGANIDÆ. *Guén.*

Lacera, *Guén.*
capilla, *Guén.*
Amphigonia, *Guén.*
hepatizans, *Guén.*

Fam. THERMISIDÆ, *Guén.*

Sympis, *Guén.*
rufibasis, *Guén.*
Thermesia, *Hübn.*
finipalpis, *Wlk.*
soluta, *Wlk.*
Azazia, *Wlk.*
rubricans, *Boisd.*
Selenis, *Guén.*
nivisapex, *Wlk.*
multiguttata, *Wlk.*
semilux, *Wlk.*
Ephyrodes, *Guén.*
excipiens, *Wlk.*
cristisfera, *Wlk.*
lineifera, *Wlk.*
Capnodes, *Guén.*
*maculicosta, *Wlk.*
Ballatha, *Wlk.*
atrotumens, *Wlk.*
Daranissa, *Wlk.*
digramma, *Wlk.*
Darsa, *Wlk.*
defectissima, *Wlk.*

Fam. URAPTERYDÆ, *Guén.*

Lagyra, *Wlk.*
Talaca, *Wlk.*

Fam. ENNOMIDÆ, *Guén.*

Hyperythra, *Guén.*
limbolaria, *Guén*
deductaria, *Wlk.*
Entomopteryx, *Guén.*
Vidhisara, *Wlk.*
poststrigaria, *Wlk.*
Orsonoba, *Wlk.*
Rajaca, *Wlk.*
Radiota, *Wlk.*
Sabaria, *Wlk.*
contractaria, *Wlk.*
Angerona, *Dup.*
blandiaria, *Wlk.*
Fascellina, *Wlk.*
chromataria, *Wlk.*

Fam. BOARMIDÆ, *Guén.*

Amblychia, *Guén.*
angeronia, *Guén.*
Boarmia, *Treit.*
sublavaria, *Guén.*
admissaria, *Guén.*
raptaria, *Wlk.*
Medasina, *Wlk.*
Bhurmitra, *Wlk.*
Suiasasa, *Wlk.*
diffluaria, *Wlk.*
caritaria, *Wlk.*
exclusaria, *Wlk.*
Hypochroma, *Guén.*
minimaria, *Guén.*
Gnophos, *Treit.*
Pulinda, *Wlk.*
Culataria, *Wlk.*
Agathia, *Guén.*
blandiaria, *Wlk.*
Bulonga, *Wlk.*
Ajaia, *Wlk.*
Chacoraca, *Wlk.*
Chandubija, *Wlk.*

Fam. GEOMETRIDÆ, *Guén.*

Geometra, *Linn.*
specularia, *Guén.*
Nanda, *Wlk.*
Nemoria, *Hübn.*
caudularia, *Guén.*
solidaria, *Guén.*
Thalassodes, *Guén.*
quadraria, *Guén.*
catenaria, *Wlk.*
immissaria, *Wlk.*
Sisunaga, *Wlk.*
adornataria, *Wlk.*
meritaria, *Wlk.*
cœlataria, *Wlk.*
gratularia, *Wlk.*
chlorozonaria, *Wlk.*
læsaria, *Wlk.*
simpliciaria, *Wlk.*
immissaria. *Wlk.*
Comibæna, *Wlk.*
Divapala, *Wlk.*
impulsaria, *Wlk.*
Celenna, *Wlk.*
saturaturia, *Wlk.*
Pseudoterpna, *Wlk.*
Vivilaca, *Wlk.*
Amaurinia, *Guén.*
rubrolimbaria, *Wlk.*

Fam. PALYADÆ, *Guén.*

Eumelea, *Dunc.*
ludovicata, *Guén.*
aureliata, *Guén.*
carneaaria, *Wlk.*

Fam. EPHYRIDÆ, *Guén.*

Ephyra, *Dup.*
obrinaria, *Wlk.*
decursaria, *Wlk.*
Cacavena, *Wlk.*
abhadraca, *Wlk.*
Vasudeva, *Wlk.*
Susarmana, *Wlk.*
Vutumana, *Wlk.*
inæquata, *Wlk.*

Fam. ACIDALIDÆ, *Guén.*

Drapetodes, *Guén.*
mitaria, *Guén.*
Pomasia, *Guén.*
Psylaria, *Guén.*
Sunandaria, *Wlk.*

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Acidalia, *Treit.*
obliviaria, *Wlk.*
adeptaria, *Wlk.*
nexiaria, *Wlk.*
addictaria, *Wlk.*
actiosaria, *Wlk.*
defamataria, *Wlk.*
negataria, *Wlk.*
actuaria, *Wlk.*
cæsaria, *Wlk.*
Cabera, *Steph.*
falsaria, *Wlk.*
decussaria, *Wlk.*
famularia, *Wlk.*
nigrarenaria, *Wlk.*
Hyria, *Steph.*
elataria, *Wlk.*
marcidaria, *Wlk.*
oblataria, *Wlk.*
grataria, *Wlk.*
rhodinaria, *Wlk.*
Timandra, *Dup.*
Ajuia, *Wlk.*
Vijuia, *Wlk.*
Agyris, *Guén.*
deliaria, *Guén.*
Zanclopteryx, *Herr. Sch.*
saponaria, *Herr. Sch.*

Fam. MICRONIDÆ, *Guén.*

Micronia, *Guén.*
caudata, *Fabr.*
aculeata, *Guén.*

Fam. MACARIDÆ, *Guén.*

Macaria, *Curt.*
Eleonora, *Cram.*
Varisara, *Wlk.*
Rhagivata, *Wlk.*
Palaca, *Wlk.*
honestaria, *Wlk.*
Sangata, *Wlk.*
honoraria, *Wlk.*
cessaria, *Wlk.*
subcaudaria, *Wlk.*
Doava, *Wlk.*
adjutaria, *Wlk.*
figuraria, *Wlk.*

Fam. LARENTIDÆ, *Guén.*

Sauris, *Guén.*
hirudinata, *Guén.*
Camptogramma, *Steph.*
baccata, *Guén.*
Blemyia, *Wlk.*
Bataca, *Wlk.*
blitiaria, *Wlk.*
Coremia, *Guén.*
Gomatina, *Wlk.*
Lobophora, *Curt.*
Salisuca, *Wlk.*

Ghosha, *Wlk.*
contributaria, *Wlk.*
Mesogramma, *Steph.*
lactularia, *Wlk.*
scitaria, *Wlk.*
Eupithecia, *Curt.*
recensitaria, *Wlk.*
admixtaria, *Wlk.*
immixtaria, *Wlk.*
Gathynia, *Wlk.*
miraria, *Wlk.*

Fam. PLATYDIDÆ, *Guén.*

Trigonia, *Guén.*
Cydonialis, *Cram.*

Fam. HYPENIDÆ, *Herr. Sch.*

Dichromia, *Guén.*
Orosialis, *Cram.*
Hypena, *Schr.*
rhombalis, *Guén.*
jocosalis, *Wlk.*
mandatalis, *Wlk.*
quæsitalis, *Wlk.*
laceratalis, *Wlk.*
iconicalis, *Wlk.*
labatalis, *Wlk.*
obacerralis, *Wlk.*
pactalis, *Wlk.*
raralis, *Wlk.*
paritalis, *Wlk.*
surreptalis, *Wlk.*
detersalis, *Wlk.*
ineffectalis, *Wlk.*
incongrualis, *Wlk.*
rubripunctum, *Wlk.*
Gesonia, *Wlk.*
*obeditalis, *Wlk.*
duplex, *Wlk.*

Fam. HERMINIDÆ, *Dup.*

Herminia, *Latr.*
Timonalis, *Wlk.*
diffusalis, *Wlk.*
interstans, *Wlk.*
Adrapsa, *Wlk.*
ablualis, *Wlk.*
Bertula, *Wlk.*
abjudicalis, *Wlk.*
raptatalis, *Wlk.*
contigens, *Wlk.*
Bocana, *Wlk.*
jutalis, *Wlk.*
manifestalis, *Wlk.*
ophiusalis, *Wlk.*
vagalis, *Wlk.*
turpatalis, *Wlk.*
hypernalis, *Wlk.*
gravatalis, *Wlk.*
tumidalis, *Wlk.*

Orthaga, *Wlk.*
Euadrusalis, *Wlk.*
Hipoepa, *Wlk.*
lapsalis, *Wlk.*
Lamura, *Wlk.*
oberratalis, *Wlk.*
Echana, *Wlk.*
abavalis, *Wlk.*
Dragana, *Wlk.*
pansalis, *Wlk.*
Pingrasa, *Wlk.*
accuralis, *Wlk.*
Egnasia, *Wlk.*
ephyradalis, *Wlk.*
accingalis, *Wlk.*
participalis, *Wlk.*
usurpatalis, *Wlk.*
Berresa, *Wlk.*
natalis, *Wlk.*
Imma, *Wlk.*
rugosalis, *Wlk.*
Chusaris, *Wlk.*
retatalis, *Wlk.*
Corgatha, *Wlk.*
zonalis, *Wlk.*
Catada, *Wlk.*
glomeralis, *Wlk.*
captiosalis, *Wlk.*

Fam. PYRALIDÆ, *Guén.*

Pyralis, *Linn.*
ignifluahis, *Wlk.*
Palesalis, *Wlk.*
reconditalis, *Wlk.*
Idulialis, *Wlk.*
Janassalis, *Wlk.*
Aglossa, *Latr.*
Gnidusalis, *Wlk.*
Labanda, *Wlk.*
herbealis, *Wlk.*

Fam. ENNYCHIDÆ, *Dup.*

Pyrausta, *Schr.*
*absistalis, *Wlk.*

Fam. ASOPIDÆ, *Guén.*

Desmia, *Westw.*
afflictalis, *Guén.*
concisalis, *Wlk.*
Ædiodes, *Guén.*
flavibasalis, *Guén.*
effertalis, *Wlk.*
Samea, *Guén.*
gratiosalis, *Wlk.*
Asopia, *Guén.*
vulgalis, *Guén.*
falsidicalis, *Wlk.*
abruptalis, *Wlk.*
latimarginalis, *Wlk.*
præteritalis, *Wlk.*
Eryxalis, *Wlk.*

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roridalis, *Wlk.*
Agathodes, *Guén.*
ostentalis, *Geyer.*
Leucinades, *Guén.*
orbonalis, *Guén.*
Hymenia, *Hübn.*
recurvalis, *Fabr.*
Agrotera, *Schr.*
suffusalis, *Wlk.*
decessalis, *Wlk.*
Isopteryx, *Guén.*
*melaleucalis, *Wlk.*
*impulsalis, *Wlk.*
*spilomelalis, *Wlk.*
acclaralis, *Wlk.*
abnegatalis, *Wlk.*

Fam. HYDROCAMPIDÆ, *Guén.*

Oligostigma, *Guén.*
obitalis, *Wlk.*
votalis, *Wlk.*
Cataclysta, *Herr. Sch.*
dilucidalis, *Guén.*
bisectalis, *Wlk.*
blandialis, *Wlk.*
elutalis, *Wlk.*

Fam. SPILOMELIDÆ, *Guén.*

Lepyrodes, *Guén.*
geometralis, *Guén.*
lepidalis, *Wlk.*
peritalis, *Wlk.*
Phalangiodes, *Guén.*
Neptisalis, *Cram.*
Spilomela, *Guén.*
meritalis, *Wlk.*
abdicalis, *Wlk.*
decussalis, *Wlk.*
aurolinealis, *Wlk.*
Nistra, *Wlk.*
cœlatalis, *Wlk.*
Pagyda, *Wlk.*
salvalis, *Wlk.*
Massepha, *Wlk.*
absolutalis, *Wlk.*

Fam. MARGARODIDÆ, *Guén.*

Glyphodes, *Guén.*
diurnalis, *Guén.*
decretalis, *Guén.*
cœsalis, *Wlk.*
univocalis, *Wlk.*
Phakellura, *L. Guild.*
gazorialis, *Guén.*
Margarodes, *Guén.*
psittacalis, *Hübn.*
pomonalis, *Guén.*
hilaralis, *Wlk.*

Pygospila, *Guén.*
Tyresalis, *Cram.*
Neurina, *Guén.*
Procopialis, *Cram.*
ignibasalis, *Wlk.*
Ilurgia, *Wlk.*
defamalis, *Wlk.*
Maruca, *Wlk.*
ruptalis, *Wlk.*
caritalis, *Wlk.*

Fam. BOTYDÆ, *Guén.*

Botys, *Latr.*
marginalis, *Cram.*
sellalis, *Guén.*
multilinealis, *Guén.*
admensalis, *Wlk.*
abjungalis, *Wlk.*
rutilalis, *Wlk.*
admixtalis, *Wlk.*
celatalis, *Wlk.*
deductalis, *Wlk.*
celsalis, *Wlk.*
vulsalis, *Wlk.*
ultimalis, *Wlk.*
tropicalis, *Wlk.*
abstrusalis, *Wlk.*
ruralis, *Wlk.*
adhœsalis, *Wlk.*
illisalis, *Wlk.*
stultalis, *Wlk.*
adductalis, *Wlk.*
histricalis, *Wlk.*
illectalis, *Wlk.*
suspicalis, *Wlk.*
Janassalis, *Wlk.*
Nephealis, *Wlk.*
Cynaralis, *Wlk.*
Dialis, *Wlk.*
Thaisalis, *Wlk.*
Dryopealis, *Wlk.*
Myrinalis, *Wlk.*
phycidalis, *Wlk.*
annulalis, *Wlk.*
brevilinealis, *Wlk.*
plagiatalis, *Wlk.*
Ebulea, *Guén.*
aberratalis, *Wlk.*
Camillalis, *Wlk.*
Pionea, *Guén.*
actualis, *Wlk.*
Optiletalis, *Wlk.*
Jubesalis, *Wlk.*
brevialis, *Wlk.*
suffusalis, *Wlk.*
Scopula, *Schr.*
revocatalis, *Wlk.*
turgidalis, *Wlk.*
volutatalis, *Wlk.*
Godara, *Wlk.*
pervasalis, *Wlk.*

Herculia, *Wlk.*
bractialis, *Wlk.*
Mecyna, *Guén.*
deprivalis, *Wlk.*

Fam. SCOPARIDÆ, *Guén.*

Scoparia, *Haw.*
murificalis, *Wlk.*
congestalis, *Wlk.*
Alconalis, *Wlk.*
Davana, *Wlk.*
Phalantalis, *Wlk.*
Darsania, *Wlk.*
Niobesalis, *Wlk.*
Dosara, *Wlk.*
cœlatella, *Wlk.*
lapsalis, *Wlk.*
immeritalis, *Wlk.*

Fam. CHOREUTIDÆ, *Staint.*

Niaccaba, *Wlk.*
sumptialis, *Wlk.*
Simæthis, *Leach.*
Clatella, *Wlk.*
Damonella, *Wlk.*
Bathusella, *Wlk.*

Fam. PHYCIDÆ, *Staint.*

Myelois, *Hübn.*
actiosella, *Wlk.*
bractiatella, *Wlk.*
cautella, *Wlk.*
adaptella, *Wlk.*
illusella, *Wlk.*
basifuscella, *Wlk.*
Ligeralis, *Wlk.*
Marsyasalis, *Wlk.*
Dascusa, *Wlk.*
Valensalis, *Wlk.*
Daroma, *Wlk.*
Zeuxoalis, *Wlk.*
Epulusalis, *Wlk.*
Timeusalis, *Wlk.*
Homœsoma, *Curt.*
gratella, *Wlk.*
Getusella, *Wlk.*
Nephopteryx, *Hübn.*
Etolusalis, *Wlk.*
Cyllusalis, *Wlk.*
Hylasalis, *Wlk.*
Acisalis, *Wlk.*
Harpaxalis, *Wlk.*
Æolusalis, *Wlk.*
Argiadesalis, *Wlk.*
Philiasalis, *Wlk.*
Pempelia, *Hübn.*
laudatella, *Wlk.*
Prionapteryx, *Steph.*
Lincusalis, *Wlk.*

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Pindicitora, *Wlk.*
Acrconalis, *Wlk.*
Annusalis, *Wlk.*
Thysbesalis, *Wlk.*
Linceusalis, *Wlk.*
Lacipea, *Wlk.*
muscosella, *Wlk.*
Araxes, *Steph.*
admotella, *Wlk.*
decusella, *Wlk.*
celsella, *Wlk.*
admigratella, *Wlk.*
coesella, *Wlk.*
candidatella, *Wlk.*
Catagela, *Wlk.*
adjurella, *Wlk.*
acricuella, *Wlk.*
lunulella, *Wlk.*

Fam. CRAMBIDÆ, *Dup.*

Crambus, *Fabr.*
concinellus, *Wlk.*
Darbhaca, *Wlk.*
inceptella, *Wlk.*
Jartheza, *Wlk.*
honorella, *Wlk.*
Bulina, *Wlk.*
solitella, *Wlk.*
Bembina, *Wlk.*
Cyanusalis, *Wlk.*
Chilo, *Zinck.*
dodatella, *Wlk.*
gratiosella, *Wlk.*
aditella, *Wlk.*
blitella, *Wlk.*
Dariausa, *Wlk.*
Eubusalis, *Wlk.*
Arrhade, *Wlk.*
Ematheonalis, *Wlk.*
Darnensis, *Wlk.*
Strephonella, *Wlk.*

Fam. CHLŒPHORIDÆ, *Staint.*

Thagora, *Wlk.*
figurans, *Wlk.*
Earias, *Hübn.*
chromatana, *Wlk.*

Fam. TORTRICIDÆ, *Steph.*

Lozotænia, *Steph.*
retractana, *Wlk.*
Peronea, *Curt.*
divisana, *Wlk.*
Lithogramma, *Steph.*
flexilineana, *Wlk.*
Dictyopteryx, *Steph.*
punctana, *Wlk.*
Homona, *Wlk.*
fasciculana, *Wlk.*
Hemonia, *Wlk.*
orbiferana, *Wlk.*
Achroia, *Hübn.*
tricingulana, *Wlk.*

Fam. YPONOMEUTIDÆ, *Steph.*

Atteva, *Wlk.*
niveigutta, *Wlk.*

Fam. GELICHIDÆ, *Staint.*

Depressaria, *Haw.*
obligatella, *Wlk.*
fimbriella, *Wlk.*
Decuaria, *Wlk.*
mendicella, *Wlk.*
Gelechia, *Hübn.*
nugatella, *Wlk.*
calatella, *Wlk.*
deductella, *Wlk.*
Perionella, *Wlk.*
Gizama, *Wlk.*
blandiella, *Wlk.*
Enisipia, *Wlk.*
falsella, *Wlk.*
Gapharia, *Wlk.*
recitatella, *Wlk.*
Goesa, *Wlk.*
decusella, *Wlk.*
Cimitra, *Wlk.*
seclusella, *Wlk.*
Ficulea, *Wlk.*
blandulella, *Wlk.*
Fresilia, *Wlk.*
nesciatella, *Wlk.*
Gesontha, *Wlk.*
captiosella, *Wlk.*
Aginis, *Wlk.*
hilariella, *Wlk.*
Cadra, *Wlk.*
defectella, *Wlk.*

Fam. GLYPHYPTIDÆ, *Staint.*

Glyphyteryx, *Hübn.*
scitulella, *Wlk.*
Hybele, *Wlk.*
mansuetella, *Wlk.*

Fam. TINEIDÆ, *Leach.*

Tinea, *Linn.*
tapetzella, *Linn.*
receptella, *Wlk.*
pelionella, *Linn.*
plagiferella, *Wlk.*

Fam. LYONETIDÆ, *Staint.*

Cachura, *Wlk.*
objectella, *Wlk.*

Fam. PTEROPHORIDÆ, *Zell.*

Pterophorus, *Geoffr.*
leucadactylus, *Wlk.*
oxydactylus, *Wlk.*
anisodactylus, *Wlk.*

Order **Diptera,** *Linn.*

Fam. MYCETOPHILIDÆ, *Hal.*

Sciara, *Meig.*
*valida, *Wlk.*

Fam. CECIDOMYZIDÆ, *Hal.*

Cecidomyia, *Latr.*
*primaria, *Wlk.*

Fam. SIMULIDÆ, *Hal.*

Simulium, *Latr.*
*destinatum, *Wlk.*

Fam. CHIRONOMIDÆ, *Hal.*

Ceratopogon, *Meig.*
*albocinctus, *Wlk.*

Fam. CULICIDÆ, *Steph.*

Culex, *Linn.*
regius, *Thwaites.*
fuscanus, *Wied.*
circumvolans, *Wlk.*
contrahens, *Wlk.*

Fam. TIPULIDÆ, *Hal.*

Ctenophora, *Fabr.*
Taprobanes, *Wlk.*
Gymnoplistia ? *Westw.*
hebes, *Wlk.*

Fam. STRATIOMIDÆ, *Latr.*

Ptilocera, *Wied.*
quadridentata, *Fabr.*
fastuosa, *Geist.*
Pachygaster, *Meig.*
rufitarsis, *Macq.*
Acanthina, *Wied.*
azurea, *Geist.*

Fam. TABANIDÆ, *Leach.*

Pangonia, *Latr.*
Taprobanes, *Wlk.*

Fam. ASILIDÆ, *Leach.*

Trupanea, *Macq.*
Ceylanica, *Macq.*
Asilus, *Linn.*
flavicornis, *Macq.*
Barium, *Wlk.*

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Fam. Dolichopidæ, *Leach.*

Psilopus, *Meig.*
*procuratus, *Wlk.*

Fam. Muscidæ, *Latr.*

Tachina ? *Fabr.*
*tenebrosa, *Wlk.*
Musca, *Linn.*
domestica, *Linn.*
Dacus. *Fabr.*
*interclusus, *Wlk.*
*nigroæneus. *Wlk.*
*detentus, *Wlk.*
Ortalis, *Fall.*
*confundens, *Wlk.*
Sciomyza, *Fall.*
*leucotelus, *Wlk.*
Drosophila, *Fall.*
*restituens, *Wlk.*

Fam. Nycteribidæ, *Leach.*

Nycteribia, *Latr.*
——— ? a species parasitic on Scotophilus Coromandelicus, *Bligh.* See *ante*, p. 161.

Order **Hemiptera,** *Linn.*

Fam. Pachycoridæ, *Dall.*

Cantao, *Amyot & Serv.*
ocellatus, *Thunb.*
Callidea, *Lap.*
superba, *Dall.*
Stockerus, *Linn.*

Fam. Eurygasteridæ, *Dall.*

Trigonosoma, *Lap.*
Desfontainii, *Fabr.*

Fam. Plataspidæ, *Dall.*

Coptosoma, *Lap.*
laticeps, *Dall.*

Fam. Halydidæ, *Dall.*

Halys, *Fabr.*
dentata, *Fabr.*

Fam. Pentatomidæ, *Steph.*

Pentatoma, *Oliv.*
Timorensensis, *Hope.*
Taprobanensis, *Dall.*
Catacanthus, *Spin.*
incarnatus, *Drury.*
Rhaphigaster. *Lap.*
congrua, *Wlk.*

Fam. Edessidæ, *Dall.*

Aspongopus, *Lap.*
Janus, *Fabr.*
Tesseratoma, *Lep. & Serv.*
papillosa, *Drury.*
Cyclopelta, *Am. & Serv.*
siccifolia, *Hope.*

Fam. Phyllocephalidæ, *Dall.*

Phyllocephala, *Lap.*
ægyptiaca, *Lefeb.*

Fam. Mictidæ, *Dall.*

Mictis, *Leach.*
castanea. *Dall.*
valida, *Dall.*
punctum, *Hope.*
Crinocerus, *Burm.*
ponderosus, *Wlk.*

Fam. Anisoscelidæ, *Dall.*

Leptoscelis, *Lap.*
ventralis. *Dall.*
turpis, *Wlk.*
marginalis, *Wlk.*
Serinetha, *Spin.*
Taprobanensis, *Dall.*
abdominalis, *Fabr.*

Fam. Alydidæ, *Dall.*

Alydus, *Fabr.*
linearis, *Fabr.*

Fam. Stenocephalidæ, *Dall.*

Leptocorisa, *Latr.*
Chinensis, *Dall.*

Fam. Coreidæ, *Steph.*

Rhopalus, *Schill.*
interruptus, *Wlk.*

Fam. Lygæidæ, *Westw.*

Lygæus, *Fabr.*
lutescens, *Wlk.*
figuratus, *Wlk.*
discifer, *Wlk.*
Rhyparochromus, *Curt.*
testaciepes, *Wlk.*

Fam. Aradidæ, *Wlk.*

Piestosoma, *Lap.*
picipes, *Wlk.*

Fam. Tingidæ, *Wlk.*

Calloniana, *Wlk.*
*elegans, *Wlk.*

Fam. Cimicidæ, *Wlk.*

Cimex, *Linn.*
lectularius, *Linn.*?

Fam. Reduviidæ, *Steph.*

Pirates, *Burm.*
marginatus, *Wlk.*
Acanthaspis. *Am. & Serv.*
sanguinipes, *Wlk.*
fulvispina, *Wlk.*

Fam. Hydrometridæ, *Leach.*

Ptilomera, *Am. & Serv.*
laticauda, *Hardw.*

Fam. Nepidæ, *Leach.*

Belostoma, *Latr.*
indicum, *St. Farg. & Serv.*
Nepa, *Linn.*
minor, *Wlk.*

Fam. Notonectidæ, *Steph.*

Notonecta, *Linn.*
abbreviata, *Wlk.*
simplex, *Wlk.*
Corixa, *Geoff.*
*subjacens, *Wlk.*

Order **Homoptera,** *Latr.*

Fam. Cicadidæ, *Westw.*

Dundubia, *Am. & Serv.*
stipata, *Wlk.*
Clonia, *Wlk.*
Larus, *Wlk.*
Cicada, *Linn.*
limitaris, *Wlk.*
nubifurca, *Wlk.*

Fam. Fulgoridæ, *Schaum*

Hotinus, *Am. & Serv.*
maculatus, *Oliv.*
fulvirostris, *Wlk.*
coccineus, *Wlk.*
Pyrops, *Spin.*

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punctata, *Oliv.*
Aphæna, *Guér.*
sanguinalis, *Westw.*
Elidiptera, *Spin.*
Emersoniadia, *White.*

Fam. CIXIIDÆ, *Wlk.*

Eurybrachys, *Guér.*
tomentosa, *Fabr.*
dilatata, *Wlk.*
crudelis, *Westw.*
Cixius, *Latr.*
*nubilus, *Wlk.*

Fam. ISSIDÆ, *Wlk.*

Hemisphærius, *Schaum.*
*Schaumi, *Stal.*
*bipustulatus, *Wlk.*

Fam. DERBIDÆ, *Schaum.*

Thracia, *Westw.*
pterophorides, *Westw.*
Derbe, *Fabr.*
*furcato-vittata, *Stal.*

Fam. FLATTIDÆ, *Schaum.*

Flatoides, *Guér.*
hyalinus, *Fabr.*
tenebrosus, *Wlk.*
Ricania, *Germ.*
hemerobii, *Wlk.*
Pœciloptera, *Latr.*
pulverulenta, *Guér.*
stellaris, *Wlk.*
Tennentina, *White.*

Fam. MEMBRACIDÆ, *Wlk.*

Oxyrhachis, *Germ.*
*indicans, *Wlk.*
Centrotus, *Fabr.*
*reponens, *Wlk.*
*malleus, *Wlk.*
substitutus, *Wlk.*
*decipiens, *Wlk.*
*relinquens, *Wlk.*
*imitator, *Wlk.*
*repressus, *Wlk.*
*terminalis, *Wlk.*

Fam. CERCOPIDÆ, *Leach.*

Cercopis, *Fabr.*
inclusa, *Wlk.*
Ptyelus, *Lep. & Serv.*
costalis, *Wlk.*

Fam. TETTIGONIIDÆ, *Wlk.*

Tettigonia, *Latr.*
paulula, *Wlk.*

Fam. SCARIDÆ, *Wlk.*

Ledra, *Fabr.*
rugosa, *Wlk.*
conica, *Wlk.*
Gypona, *Germ.*
prasina, *Wlk.*

Fam. IASSIDÆ, *Wlk.*

Acocephalus, *Germ.*
porrectus, *Wlk.*

Fam. PSYLLIDÆ, *Latr.*

Psylla, *Goff.*
*marginalis, *Wlk.*

Fam. COCCIDÆ, *Leach.*

Lecanium, *Illig.*
Coffeæ, *Wlk.*

CHAP. VII.

ARACHNIDA — MYRIOPODA — CRUSTACEA, ETC.

WITH a few striking exceptions, the true *spiders* of Ceylon resemble in œconomy and appearance those we are accustomed to see at home. They frequent the houses, the gardens, the rocks and the stems of trees; and along the sunny paths, where the forest meets the open country, the *Epeira* and her congeners, the true net-weaving spiders, extend their lacework, the grace of their designs being even less attractive than the beauty of the creatures that elaborate them.

Those that live in the woods select with singular sagacity the bridle-paths and narrow passages for expanding their nets; no doubt perceiving that the larger insects frequent these openings for facility of movement through the jungle; and that the smaller ones are carried towards them by the currents of air. These nets are stretched across the path from four to eight feet above the ground, hung from projecting shoots, and attached, if possible, to thorny shrubs; and sometimes exhibit the most remarkable scenes of carnage and destruction. I have taken down a ball as large as a man's head consisting of successive layers rolled together, in the heart of which was the den of the family, whilst the envelope was formed, sheet after sheet, by coils of the old web filled with the wings and limbs of insects of all descriptions, from the largest moths and butterflies to mosquitoes and minute coleoptera. Each layer appeared to have been originally suspended across the passage to intercept the expected prey; and, as it became surcharged with carcases, it was loosened, tossed

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over by the wind or its own weight, and wrapped round the nucleus in the centre, the spider replacing it by a fresh sheet, to be in turn detached and added to the mass within.

Walckenaer has described a species of large size, under the name of *Olios Taprobanius*, which is very common and conspicuous from the fiery hue of the under surface, the remainder being covered with gray hair so short and fine that the body seems almost denuded. It spins a moderate-sized web, hung vertically between two sets of strong lines, stretched one above the other athwart the pathways. Some of the spider-cords thus carried horizontally from tree to tree at a considerable height from the ground are so strong as to cause a painful check across the face when moving quickly against them; and more than once in riding I have had my hat lifted off my head by a single thread.[1]

Separated by marked peculiarities of structure, as well as of instinct, from the spiders which live in the open air, and busy themselves in providing food during the day, the *Mygale fasciata* is not only sluggish in its habits, but disgusting in its form and dimensions. Its colour is a gloomy brown, interrupted by irregular blotches and faint bands (whence its trivial name); it is sparingly sprinkled with hairs, and its limbs, when expanded, stretch over an area of six to eight inches in diameter. It is familiar to Europeans in Ceylon, who have given it the name, and ascribed to it the fabulous propensities, of the Tarentula.[2]

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[1] Over the country generally are scattered species of *Gasteracantha*, remarkable for their firm shell-covered bodies, with projecting knobs arranged in pairs. In habit these anomalous-looking *Epeiridæ* appear to differ in no respect from the rest of the family, waylaying their prey in similar situations and in the same manner.

Another very singular subgenus, met with in Ceylon, is distinguished by the abdomen being dilated behind, and armed with two long spines, arching obliquely backwards. These abnormal kinds are not so handsomely coloured as the smaller species of typical form.

[2] Species of the true *Tarentulæ* are not uncommon in Ceylon; they are all of very small size, and perfectly harmless.

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· By day it remains concealed in its den, whence it issues at night to feed on larvæ and worms, devouring cockroaches[1] and their pupæ, and attacking the millepeds, *gryllotalpæ*, and other fleshy insects. The Mygale is found abundantly in the northern and eastern parts of the island, and occasionally in dark unfrequented apartments in the western province; but its inclinations are solitary, and it shuns the busy traffic of towns.

Ticks. — Ticks are to be classed among the intolerable nuisances to the Ceylon traveller. They live in immense numbers in the jungle[2], and attaching themselves to the plants by the two forelegs, lie in wait to catch at unwary animals as they pass. A shower of these dimi-

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[1] Mr. EDGAR L. LAYARD has described the encounter between a Mygale and a cockroach, which he witnessed in the madua of a temple at Alittane, between Anarajapoora and Dambool. When about a yard apart, each discerned the other and stood still, the spider with his legs slightly bent and his body raised, the cockroach confronting him and directing his antennæ with a restless undulation towards his enemy. The spider, by stealthy movements, approached to within a few inches and paused, both parties eyeing each other intently: then suddenly a rush, a scuffle, and both fell to the ground, when the blatta's wings closed, the spider seized it under the throat with his claws, and dragging it into a corner, the action of his jaws was distinctly audible. Next morning Mr. Layard found the soft parts of the body had been eaten, nothing but the head, thorax, and elytra remaining. — *Ann. & Mag. Nat. Hist.* May, 1853.

[2] Dr. HOOKER, in his *Himalayan Journal*, vol. i. p. 279, in speaking of the multitude of these creatures in the mountains of Nepal, wonders what they find to feed on, as in these humid forests in which they literally swarmed, there was neither pathway nor animal life. In Ceylon they abound everywhere in the plains on the low brushwood; and in the very driest seasons they are quite as numerous as at other times. In the mountain zone, which is more humid, they are less prevalent. Dogs are tormented by them; and they display something closely allied to cunning in always fastening on an animal in those parts where they cannot be torn off by his paws; on his eyebrows, the tips of his ears, and the back of his neck. With a corresponding instinct I have always observed in the gambols of the Pariah dogs, that they invariably commence their attentions by mutually gnawing each other's ears and necks, as if in pursuit of ticks from places from which each is unable to expel them for himself. Horses have a similar instinct; and when they meet, they apply their teeth to the roots of the ears of their companions, to the neck and the crown of the head. The buffaloes and oxen are relieved of ticks by the crows which rest on their backs as they browse, and free them from these pests. In the low country the same acceptable office is performed by the "cattle-keeper heron" (*Ardea bubulcus*), which is "sure to be found in attendance on them while grazing; and the animals seem to know their benefactors, and stand quietly, while the birds peck their tormentors from their flanks."—*Mag. Nat. Hist.* p. 111, 1844.

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nutive vermin will sometimes drop from a branch, if unluckily shaken, and disperse themselves over the body, each fastening on the neck, the ears, and eyelids, and inserting a barbed proboscis. They burrow, with their heads pressed as far as practicable under the skin, causing a sensation of smarting, as if particles of red hot sand had been scattered over the flesh. If torn from their hold, the suckers remain behind and form an ulcer. The only safe expedient is to tolerate the agony of their penetration till a drop of coco-nut oil or the juice of a lime can be applied, when these little furies drop off without further ill consequences. One very large species, dappled with grey, attaches itself to the buffaloes.

Mites.—The *Trombidium tinctorum* of Hermann is found about Aripo, and generally over the northern provinces,—where after a shower of rain or heavy night's dew, they appear in countless myriads. It is about half an inch long, like a tuft of crimson velvet, and imparts its colouring matter readily to any fluid in which it may be immersed. It feeds on vegetable juices, and is perfectly innocuous. Its European representative, similarly tinted, and found in garden mould, is commonly called the "Little red pillion."

MYRIAPODS. — The certainty with which an accidental pressure or unguarded touch is resented and retorted by a bite, makes the centipede, when it has taken up its temporary abode within a sleeve or the fold of a dress, by far the most unwelcome of all the Singhalese assailants. The great size, too (little short of a foot in length), to which it sometimes attains, renders it formidable; and, apart from the apprehension of unpleasant consequences from a wound, one shudders at the bare idea of such hideous creatures crawling over the skin, beneath the innermost folds of one's garments.

At the head of the *Myriapods*, and pre-eminent from a superiorly-developed organisation, stands the genus *Cermatia:* singular-looking objects; mounted upon

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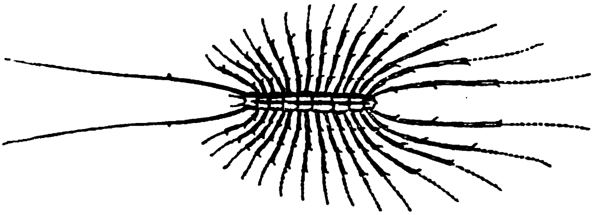
slender legs, of gradually increasing length from front to rear, the hind ones in some species being amazingly prolonged, and all handsomely marked with brown annuli in concentric arches. These myriapods are



CERMATIA.

harmless, excepting to woodlice, spiders, and young cockroaches, which form their ordinary prey. They are rarely to be seen; but occasionally at daybreak, after a more than usually abundant repast, they may be observed motionless, and resting with their regularly extended limbs nearly flat against the walls. On being disturbed they dart away with a surprising velocity, to conceal themselves in chinks until the return of night.

But the species to be really dreaded are the true *Scolopendræ*, which are active and carnivorous, living in holes in old walls and other gloomy dens. One species [1] attains to nearly the length of a foot, with corresponding breadth; it is of a dark purple colour, approaching black, with yellowish legs and antennæ, and its whole aspect repulsive and frightful. It is strong and active, and evinces an eager disposition to fight when molested. The *Scolopendræ* are gifted by nature with a rigid coriaceous armour, which does not yield to common pressure, or even to a moderate blow; so that they often escape the most well-deserved and well-directed attempts to destroy them, seeking refuge in retreats which effectually conceal them from sight.

There is a smaller one [2], which frequents dwelling-

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[1] *Scolopendra crassa*, Temp. [2] *Scolopendra pullipes.*

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houses, about one quarter the size of the preceding, of a dirty olive colour, with pale ferruginous legs. It is this species which generally inflicts the wound, when persons complain of being bitten by a scorpion; and it has a mischievous propensity for insinuating itself into the folds of dress. The bite at first does not occasion more suffering than would arise from the penetration of two coarsely-pointed needles; but after a little time the wound swells, becomes acutely painful, and if it be over a bone or any other resisting part, the sensation is so intolerable as to produce fever. The agony subsides after a few hours' duration. In some cases the bite is unattended by any particular degree of annoyance, and in these instances it is to be supposed that the contents of the poison gland had become exhausted by previous efforts, since, if much tasked, the organ requires rest to enable it to resume its accustomed functions and to secrete a supply of venom.

Millipeds.—In the hot dry season, and in the northern portions of the island more especially, the eye is attracted along the edges of the sandy roads by fragments of the dislocated rings of a huge species of millipede[1], lying in short, curved tubes, the cavity admitting the tip of the little finger. When perfect the creature is two-thirds of a foot long, of a brilliant jet black, and with above a hundred yellow legs, which, when moving onward, present the appearance of a series of undulations from rear to front, bearing the animal gently forwards. This *julus* is harmless, and may be handled with perfect impunity. Its food consists chiefly of fruits and the roots and stems of succulent vegetables, its jaws not being framed for any more formidable purpose. Another and a very pretty species[2], quite as black, but with a bright crimson band down the back, and the legs similarly tinted, is common in the gardens about Colombo and throughout the western province.

[1] *Julus ater*, Temp.

[2] *Julus carnifex*, Fab.

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CRUSTACEA. — The seas around Ceylon abound with marine articulata; but a knowledge of the crustacea of the island is at present a desideratum; and with the exception of the few commoner species which frequent the shores, or are offered in the markets, we are literally without information, excepting the little that can be gleaned from already published systematic works.

In the bazaars several species of edible crabs are exposed for sale; and amongst the delicacies at the tables of Europeans, curries made from prawns and lobsters are the triumphs of the Ceylon cuisine. Of these latter the fishermen sometimes exhibit specimens[1] of extraordinary dimensions, and of a beautiful purple hue, variegated with white. Along the level shore north and south of Colombo, and in no less profusion elsewhere, the nimble little Calling Crabs[2] scamper over the moist sands, carrying aloft the enormous hand (sometimes larger than the rest of the body), which is their peculiar characteristic, and which, from its beckoning gesture, has suggested their popular name. They hurry to conceal themselves in the deep retreats which they hollow out in the banks that border the sea.

CALLING CRAB OF CEYLON.

Sand Crabs. — In the same localities, or a little farther inland, the *ocypode*[3] burrows in the dry soil, making deep excavations, bringing up literally armfuls of sand; which with a spring in the air, and employing its other limbs, it jerks far from its burrows, distributing it in radii to the distance of several feet.[4] So inconvenient are the operations of these industrious pests that men

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[1] *Palinurus ornatus*, Fab.

[2] *Gelasimus tetragonon?* Edw.; *G. annulipes?* Edw.; *G. Dussumieri?* Edw.

[3] *Ocypode ceratophthalmus*, Pall.

[4] *Ann. Nat. Hist.* April, 1852. Paper by Mr. EDGAR L. LAYARD.

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are kept regularly employed at Colombo in filling up the holes formed by them on the surface of the Galle face, which is the only equestrian promenade of the capital; but so infested by these active little creatures that accidents often occur by horses stumbling in their troublesome excavations.

Painted Crabs. — On the reefs which lie to the south of the harbour at Colombo, the beautiful little painted crabs[1], distinguished by dark red markings on a yellow ground, may be seen all day long running nimbly in the spray, and ascending and descending in security the almost perpendicular sides of the rocks which are washed by the waves. *Paddling Crabs*[2], with the hind pair of legs terminated by flattened plates to assist them in swimming, are brought up in the fishermen's nets. *Hermit Crabs* take possession of the deserted shells of the univalves, and crawl in pursuit of garbage along the moist beach. Prawns and shrimps furnish delicacies for the breakfast table; and the delicate little pea crab, *Pontonia inflata*[3], recalls its Mediterranean congener[4], which attracted the attention of Aristotle, from taking up its habitation in the shell of the living pinna.

ANNELIDÆ. — The marine *Annelides* of the island have not as yet been investigated; a cursory glance, however, amongst the stones on the beach at Trincomalie and in the pools, which afford convenient basins for examining them, would lead to the belief that the marine species are not numerous; tubicole genera, as well as some nereids, are found, but there seems to be little diversity; though it is not impossible that a closer scrutiny might be repaid by the discovery of some interesting forms.

Leeches.—Of all the plagues which beset the traveller

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1 *Grapsus strigosus*, Herbst.

2 *Neptunus pelagicus*, Linn.; *N. sanguinolentus*, Herbst, &c. &c.

3 MILNE EDW. *Hist. Nat. Crust.* vol. ii. p. 360.

4 *Pinnotheres veterum.*

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in the rising grounds of Ceylon, the most detested are the land leeches.[1] They are not frequent in the plains,

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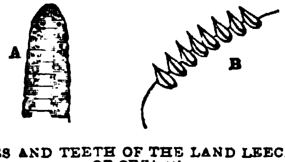
[1] *Hæmadipsa Ceylanica*, Bosc. Blainv. These pests are not, however, confined to Ceylon; they infest the lower ranges of the Himalaya. — HOOKER, vol. i. p. 107; vol. ii. p. 54. THUNBERG, who records (*Travels*, vol. iv. p. 232) having seen them in Ceylon, likewise met with them in the forests and slopes of Batavia. MARSDEN (*Hist.* p. 311) complains of them dropping on travellers in Sumatra. KNORR found them at Japan; and it is affirmed that they abound in islands farther to the eastward. M. GAY encountered them in Chili. — (MOQUIN-TANDON, *Hirudinées*, pp. 211, 346.) It is very doubtful, however, whether all these are to be referred to one species. M. DE BLAINVILLE, under *H. Ceylanica*, in the *Dict. de Scien. Nat.* vol. xlvii. p. 271, quotes M. Bosc as authority for the kind which that naturalist describes being "rouges et tachetées;" which is scarcely applicable to the Singhalese species. It is more than probable, therefore, considering the period at which M. Bosc wrote, that he obtained his information from travellers to the further east, and has connected with the habitat universally ascribed to them from old KNOX's work (Part I. chap. vi.) a meagre description, more properly belonging to the land leech of Batavia or Japan. In all likelihood, therefore, there may be a *H. Boscii*, distinct from the *H. Ceylanica*. That which is found in Ceylon is round, a little flattened on the inferior surface, largest at the anal extremity, thence gradually tapering forward, and with the anal composed of four rings, and wider in proportion than in other species. It is of a clear brown colour, with a yellow stripe the entire length of each side, and a greenish dorsal one. The body is formed of 100 rings; the eyes, of which there are five pairs, are placed in an arch on the dorsal surface; the first four pairs occupying contiguous rings (thus differing from the water leeches, which have an unoccupied ring betwixt the third and fourth); the fifth pair are located on the seventh ring, two vacant rings intervening. To Dr. Thwaites, Director of the Botanic Garden at Peradinia, who at my request examined their structure minutely, I am indebted for the following most interesting particulars respecting them. "I have been giving a little time to the examination of the land leech. I find it to have five pairs of ocelli, the first four seated on corresponding segments, and the posterior pair on the seventh segment or ring, the fifth and sixth rings being eyeless (*fig.* A). The mouth is very retractile, and the aperture is shaped as in ordinary leeches. The serratures of the teeth, or rather the teeth themselves, are very beautiful. Each of the three "teeth," or cutting instruments, is principally muscular, the muscular body being very clearly seen. The rounded edge in which the teeth are set appears to be cartilaginous in structure; the teeth are very numerous, (*fig.* B); but some near the base have a curious appendage, apparently (I have not yet made this out quite satisfactorily) set upon one side. I have not yet been able to detect the anal or sexual pores. The anal sucker seems to be formed of four rings, and on each side above is a sort of crenated flesh-like appendege. The tint of the common species is yellowish-brown or snuff-coloured, streaked with black, with a yellow-greenish dorsal, and another lateral line along



EYES AND TEETH OF THE LAND LEECHES OF CEYLON.

which are too hot and dry for them; but amongst the rank vegetation in the lower ranges of the hill country, which is kept damp by frequent showers, they are found in tormenting profusion. They are terrestrial, never visiting ponds or streams. In size they are about an inch in length, and as fine as a common knitting needle; but capable of distension till they equal a quill in thickness, and attain a length of nearly two inches. Their structure is so flexible that they can insinuate themselves through the meshes of the finest stocking, not only seizing on the feet and ankles, but ascending to the back and throat, and fastening on the tenderest parts of the body. The coffee planters, who live amongst these pests, are obliged, in order to exclude them, to envelope their legs in "leech gaiters" made of closely woven cloth. The natives smear their bodies with oil, tobacco ashes, or lemon juice[1]; the latter serving not only to stop the flow of blood, but to expedite the healing of the wounds. In moving, the land leeches have the power of planting one extremity on the earth and raising the other perpendicularly to watch for their victim. Such is their vigilance and instinct, that on the approach of a passer-by to a spot which they infest, they may be seen amongst the grass and fallen leaves on the edge of a native path, poised erect, and

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its whole length. There is a larger species to be found in this garden with a broad green dorsal fascia; but I have not been able to procure one although I have offered a small reward to any coolie who will bring me one." In a subsequent communication Mr. Thwaites remarks "that the dorsal longitudinal fascia is of the same width as the lateral ones, and differs only in being perhaps slightly more green; the colour of the three fasciæ varies from brownish yellow to bright green." He likewise states "that the rings which compose the body are just 100, and the teeth 70 to 80 in each set, in a single row, except to one end, where they are in a double row."

[1] The Minorite friar, ODORIC of Portenau, writing in A. D. 1320, says that the gem-finders who sought the jewels around Adam's Peak, "take lemons which they peel, anointing themselves with the juice thereof, so that the leeches may not be able to hurt them."—HAKLUYT, *Voy.* vol. ii. p. 58.

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preparing for their attack on man and horse. On descrying their prey they advance rapidly by semicircular strides, fixing one end firmly and arching the

LAND LEECHES.

other forwards, till by successive advances they can lay hold of the traveller's foot, when they disengage themselves from the ground and ascend his dress in search of an aperture to enter. In these encounters the individuals in the rear of a party of travellers in the jungle invariably fare worst, as the leeches, once warned of their approach, congregate with singular celerity. Their size is so insignificant, and the wound they make is so skilfully punctured, that both are generally imperceptible, and the first intimation of their onslaught is the trickling of the blood or a chill feeling of the leech when it begins to hang heavily on the skin from being distended by its repast. Horses are driven wild by them, and stamp the ground in fury to shake them from their fetlocks, to which they hang in bloody tassels. The bare legs of the palankin bearers and coolies are a favourite resort; and, their hands being too much engaged to be spared to pull them off, the leeches hang like bunches of grapes round their ankles; and I have seen the blood literally flowing over the edge of a European's shoe from their innumerable bites. In healthy constitutions the wounds, if not irritated, generally heal, occasioning no other inconvenience than a slight inflammation and itching; but in those with a bad state of body, the punctures, if rubbed, are liable

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to degenerate into ulcers, which may lead to the loss of the limb or life. Both Marshall and Davy mention, that during the marches of troops in the mountains, when the Kandyans were in rebellion, in 1818, the soldiers, and especially the Madras sepoys, with the pioneers and coolies, suffered so severely from this cause that numbers of them perished.[1]

One circumstance regarding these land leeches is remarkable and unexplained; they are helpless without moisture, and in the hills where they abound at all other times, they entirely disappear during long droughts; — yet re-appear instantaneously on the very first fall of rain; and in spots previously parched, where not one was visible an hour before; a single shower is sufficient to reproduce them in thousands, lurking beneath the decaying leaves, or striding with rapid movements across the gravel. Whence do they re-appear? Do they, too, take a "summer sleep," like the reptiles, molluscs, and tank fishes, or may they be, like the *Rotifera*, dried up and preserved for an indefinite period, resuming their vital activity on the mere recurrence of moisture?

Besides the medicinal leech, a species of which[2] is

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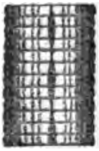
[1] DAVY'S *Ceylon*, p. 104; MARSHALL'S *Ceylon*, p. 15.

[2] *Hirudo sanguisorba*. The paddi-field leech of Ceylon, used for surgical purposes, has the dorsal surface of blackish olive, with several longitudinal striæ, more or less defined; the crenated margin yellow. The ventral surface is fulvous, bordered laterally with olive; the extreme margin yellow. The eyes are ranged as in the common medicinal leech of Europe; the four anterior ones rather larger than the others. The teeth are 140 in each series, appearing as a single row; in size diminishing gradually from one end, very close set, and about half the width of a tooth apart. When of full size, these leeches are about two inches long, but reaching to six inches when extended. Mr. Thwaites, to whom I am indebted for these particulars, adds that he saw in a tank at Colonna Corle leeches which appeared to him flatter and of a darker colour than those described above, but that he had not an opportunity of examining them particularly.



DORSAL.

VENTRAL.

Mr. Thwaites states that there is a smaller tank leech of an olive-green colour, with some indistinct longitudinal striæ on the upper surface;

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found in Ceylon, nearly double the size of the European one, and with a prodigious faculty of engorging blood, there is another pest in the low country, which is a source of considerable annoyance, and often of loss, to the husbandman. This is the cattle leech[1], which infests the stagnant pools, chiefly in the alluvial lands around the base of the mountain zone, to which the cattle resort by day, and the wild animals by night, to quench their thirst and to bathe. Lurking amongst the rank vegetation which fringes these deep pools, and hid by the broad leaves, or concealed among the stems and roots covered by the water, there are quantities of these pests in wait to attack the animals that approach them. Their natural food consists of the juices of lumbrici and other invertebrata; but they generally avail themselves of the opportunity afforded by the dipping of the muzzles of the animals into the water to fasten on their nostrils, and by degrees to make their way to the deeper recesses of the nasal passages, and the mucous membranes of the throat and gullet. As many as a dozen have been found attached to the epiglottis and pharynx of a bullock, producing such irritation and submucous effusion that death has even-

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the crenated margin of a pale yellowish-green; ocelli as in the paddi-field leech. Length, one inch at rest, three inches when extended.

Mr. E. LAYARD informs us, *Mag. Nat. Hist.* p. 225, 1853, that a bubbling spring at the village of Tonniotoo, three miles S. W. of Moeletivoe, supplies most of the leeches used in the island. Those in use at Colombo are obtained in the immediate vicinity.

[1] *Hæmopsis paludum.* In size the cattle leech of Ceylon is somewhat larger than the medicinal leech of Europe; in colour it is of a uniform brown without bands, unless a rufous margin may be so considered. It has dark striæ. The body is somewhat rounded, flat when swimming, and composed of rather more than ninety rings. The greatest dimension is a little in advance of the anal sucker; the body thence tapers to the other extremity, which ends in an upper lip projecting considerably beyond the mouth. The eyes, ten in number, are disposed as in the common leech. The mouth is oval, the biting apparatus with difficulty seen, and the teeth not very numerous. The bite is so little acute that the moment of attachment and of division of the membrane is scarcely perceived by the sufferer from its attack.

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tually ensued; and so tenacious are the leeches that even after death they retain their hold for some hours.[1]

ARTICULATA.

APTERA.

Thysanura.

Podura *albicollis.*
atricollis.
viduata.
pilosa.
Achoreutes *coccinea.*
Lepisma nigrofasciata, *Temp.*
nigra.

Arachnida.

Buthus afer, *Linn.*
Ceylonicus, *Koch.*
Scorpio *linearis.*
Chelifer librorum.
oblongus.
Obisium *crassifemur.*
Phrynus lunatus, *Pall.*
Thelyphonus caudatus, *Linn.*
Phalangium *bisignatum.*
Mygale fasciata, *Walck.*
Olios taprobanius, *Walck.*
Nephila . . . . . ?
Trombidium tinctorum, *Herm.*
Oribata . . . . . ?
Ixodes . . . . . ?

Myriapoda.

Cermatia *dispar.*
Lithobius *umbratilis.*
Scolopendra *crassa.*
spinosa, *Newp.*
pallipes.
Grayii? *Newp.*
tuberculidens, *Newp.*
Ceylonensis, *Newp.*
flava, *Newp.*
olivacea.
abdominalis.
Cryptops *sordidus.*
assimilis.
Geophilus *tegularius.*
speciosus.
Julus *ater.*
carnifex, *Fabr.*
pallipes.
flaviceps.
pallidus.
Craspedosoma *juloides.*
præusta.
Polydesmus *granulatus.*
Cambala *catenulata.*
Zephronia *conspicua.*

CRUSTACEA.

Decapoda brachyura.

Polybius.
Neptunus pelagicus, *Linn.*
sanguinolentus, *Herbst.*
Thalamita . . . . ?
Thelphusa *Indica*, *Latr.*
Cardisoma . . . . ?
Ocypoda ceratophthalmus, *Pall.*
macrocera, *Edw.*
Gelasimus *tetragonon*, *Edw.*
annulipes, *Edw.*
Macrophthalmus *carinimanus*, *Latr.*
Grapsus *messor*, *Forsk.*
strigosus, *Herbst.*
Plagusia depressa, *Fabr.*
Calappa philargus, *Linn.*
tuberculata, *Fabr.*
Matuta victor, *Fabr.*
Leucosia *fugax*, *Fabr.*
Dorippe.

Decapoda anomura.

Dromia . . . . ?
Hippa Asiatica, *Edw.*
Pagurus affinis, *Edw.*
punctulatus, *Oliv.*
Porcellana . . . . ?

[1] Even men are not safe, when stooping to drink at a pool, from the assault of the cattle leeches. They cannot penetrate the human skin, but the delicate membrane of the mucous passages is easily ruptured by their serrated jaws. Instances have come to my knowledge of Europeans into whose nostrils they have gained admission and caused serious disturbance.

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Decapoda macrura.

Scyllarus *orientalis*, *Fab.*
Palinurus ornatus, *Fab.*
  affinis, N.S.
Crangon . . . . ?
Alpheus . . . . ?
Pontonia inflata, *Edw.*
Palæmon carcinus, *Fabr.*
Stenopus . . . . ?
Peneus . . . . ?

Stomatopoda.

Squilla . . . . ?
Gonodactylus chiragra, *Fabr.*

CIRRHIPEDIA.

Lepas.
Balanus.

ANNELIDA.

Tubicolæ.
Dorsibranchiata.
Abranchia.
  Hirudo *sanguisorba.*
    Thwaitesii.
  Hæmopsis *paludum.*
  Hæmadipsa Ceylana, *Blainv.*
  Lumbricus . . . . ?

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PART III.

THE SINGHALESE CHRONICLES.

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CHAPTER I.

SOURCES OF SINGHALESE HISTORY.—THE MAHAWANSO AND OTHER NATIVE ANNALS.

It was long affirmed by Europeans that the Singhalese annals, like those of the Hindus, were devoid of interest or value as historical material; that, as religious disquisitions, they were the ravings of fanaticism, and that myths and romances had been reduced to the semblance of national chronicles. Such was the opinion of the Portuguese writers De Barros and De Couto; and Valentyn, who, about the year 1725, published his great work on the Dutch possessions in India, states his conviction that no reliance can be placed on such of the Singhalese books as profess to record the ancient condition of the country. These he held to be even of less authority than the traditions of the same events which had descended from father to son. On the information of learned Singhalese, drawn apparently from the *Rajavali*, he inserted an account of the native sovereigns, from the earliest times to the arrival of the Portuguese; but, wearied by the monotonous inanity of the story, he omitted every reign between the fifth and fifteenth centuries of the Christian era.[1]

A writer, who, under the signature of Philalethes, published, in 1816, *A History of Ceylon from the earliest period*, adopted the dictum of Valentyn, and contented himself with still further condensing the "account," which the latter had given "of the ancient Emperors

[1] Valentyn, *Oud en Nieuw Oost-Indien, &c., Landbeschryving van t' Eyland Ceylon.* ch. iv. p. 60.

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and Kings" of the island. Dr. DAVY compiled that portion of his excellent narrative which has reference to the early history of Kandy, chiefly from the recitals of the most intelligent natives, borrowed, as in the case of the informants of Valentyn, from the perusal of the popular legends; and he and every other author unacquainted with the native language, who wrote on Ceylon previous to 1833, assumed without inquiry the non-existence of historic data.[1]

It was not till about the year 1826 that the discovery was made and communicated to Europe, that whilst the history of India was only to be conjectured from myths and elaborated from the dates on copper grants, or fading inscriptions on rocks and columns[2], Ceylon was in possession of continuous written chronicles, rich in authentic facts, and not only presenting a connected history of the island itself, but also yielding valuable materials for elucidating that of India. At the moment when Prinsep was deciphering the mysterious Buddhist inscriptions, which are scattered over Hindustan and Western India, and when Csoma de Körrös was unrolling the Buddhist records of Thibet, and Hodgson those of Nepaul, a fellow labourer of kindred genius was successfully exploring the Pali manuscripts of Ceylon, and developing results not less remarkable nor less conducive to the illustration of the early history of Southern Asia. Mr. Turnour, a civil officer of the Ceylon service[3], was then administering

[1] DAVY's *Ceylon*, ch. x. p. 293. See also PERCEVAL's *Ceylon*, p. 4.

[2] REINAUD, *Mémoire sur l'Inde*, p. 3.

[3] GEORGE TURNOUR was the eldest son of the Hon. George Turnour, son of the first Earl of Winterton; his mother being Emilie, niece to the Cardinal Duc de Beausset. He was born in Ceylon in 1799, and having been educated in England under the guardianship of the Right Hon. Sir Thomas Maitland, then governor of the island, he entered the Civil Service in 1818, in which he rose to the highest rank. He was distinguished equally by his abilities and his modest display of them. Interpreting in its largest sense the duty enjoined on him, as a public officer, of acquiring a knowledge of the native languages, he extended his studies, from the vernacular and written Singhalese to Pali, the great root and original of both, known only to the Buddhist priesthood, and imperfectly and even rarely amongst them. No diction-

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the government of the district of Saffragam, and being resident at Ratnapoora near the foot of Adam's Peak, he was enabled to pursue his studies under the guid-

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aries then existed to assist in defining the meaning of Pali terms which no teacher could be found capable of rendering into English, so that Mr. Turnour was entirely dependent on his knowledge of Singhalese as a medium for translating them. To an ordinary mind such obstructions would have proved insurmountable, aggravated as they were by discouragements arising from the assumed barrenness of the field, and the absence of all sympathy with his pursuits, on the part of those around him, who reserved their applause and encouragement till success had rendered him independent of either. To this indifference of the government officers, Major Forbes, who was then the resident at Matelle, formed an honourable exception; and his narrative of *Eleven Years in Ceylon* shows with what ardour and success he shared the tastes and cultivated the studies to which he had been directed by the genius and example of Turnour. So zealous and unobtrusive were the pursuits of the latter, that even his immediate connexions and relatives were unaware of the value and extent of his acquirements till apprised of their importance and profundity by the acclamation with which his discoveries and translations from the Pali were received by the savans of Europe. Major Forbes, in a private letter, which I have been permitted to see, speaking of the difficulty of doing justice to the literary character of Turnour, and the ability, energy, and perseverance which he exhibited in his historical investigations, says, "his *Epitome of the History of Ceylon* was from the first *correct;* I saw it seven years before it was published, and it scarcely required an alteration afterwards." Whilst engaged in his translation of the *Mahawanso,* TURNOUR, amongst other able papers on *Buddhist History* and *Indian Chronology* in the *Journal of the Bengal Asiatic Society,* v. 521, vi. 299, 790, 1049, contributed a series of essays *on the Pali-Buddhistical Annals,* which were published in 1836, 1837, 1838.—*Journ. Asiatic Soc. Bengal,* vi. 501, 714, vii. 686, 789, 919. At various times he published in the same journal an account of the *Tooth Relic of Ceylon, Ib.* vi. 856, and notes on the inscriptions on the columns of Delhi, Allahabad, and Betiah, &c. &c., and frequent notices of Ceylon coins and inscriptions. He had likewise planned another undertaking of signal importance, the translation into English of a Pali version of the Buddhist scriptures, an ancient copy of which he had discovered, unencumbered by the ignorant commentaries of later writers, and the fables with which they have defaced the plain and simple doctrines of the early faith. He announced his intention in the *Introduction to the Mahawanso* to expedite the publication, as "the least tardy means of effecting a comparison of the Pali with the Sanskrit version" (p. cx.). His correspondence with Prinsep, which I have been permitted by his family to inspect, abounds with the evidence of inchoate inquiries in which their congenial spirits had a common interest, but which were abruptly ended by the premature decease of both. Turnour, with shattered health, returned to Europe in 1842, and died at Naples on the 10th of April in the following year. The first volume of his translation of the *Mahawanso,* which contains thirty-eight chapters out of the hundred which form the original work, was published at Colombo in 1837; and apprehensive that scepticism might assail the authenticity of a discovery so important, he accompanied his English version with a reprint of the original Pali in Roman characters with diacritical points.

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ance of Gallé, a learned priest, through whose instrumentality he obtained from the Wihara, at Mulgiri-galla, near Tangalle (a temple founded about 130 years before the Christian era), some rare and important manuscripts, the perusal of which gave an impulse and direction to the investigations which occupied the rest of his life.

It is necessary to premise, that the most renowned of the Singhalese books is the *Mahawanso*, a metrical chronicle, containing a dynastic history of the island for twenty-three centuries from B.C. 543 to A.D. 1758. But being written in Pali verse its existence in modern times was only known to the priests, and owing to the obscurity of its diction it had ceased to be studied by even the learned amongst them.

To relieve the obscurity of their writings, and supply the omissions, occasioned by the fetters of rhythm and the necessity of permutations and elisions, required to accommodate their phraseology to the obligations of verse; the Pali authors of antiquity were accustomed to accompany their metrical compositions with a *tika* or running commentary, which contained a literal version of the mystical text, and supplied illustrations of its more abstruse passages. Such a *tika* on the *Mahawanso* was generally known to have been written; but so utter was the neglect into which both it and the original text had been permitted to fall, that Turnour till 1826 had never met with an individual who had critically read the one, or more than casually heard of the existence of the other.[1] At length, amongst

He did not live to conclude the task he had so nobly begun; he died while engaged on the second volume of his translation, and only a few chapters, executed with his characteristic accuracy, remain in manuscript in the possession of his surviving relatives. It diminishes, though in a slight degree, our regret for the interruption of his literary labours to know that the section of the *Mahawanso* which he left unfinished is inferior both in authority and value to the earlier portion of the work, and that being composed at a period when literature was at its lowest ebb in Ceylon, it differs little if at all from other chronicles written during the decline of the native dynasty.

[1] TURNOUR's *Mahawanso*, introduction, vol. i. p. ii.

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the books which were procured for him by the high priest of Saffragam, was one which proved to be this neglected commentary on the mystic and otherwise unintelligible *Mahawanso;* and by the assistance of this precious document he undertook, with confidence, a translation into English of the long lost chronicle, and thus vindicated the claim of Ceylon to the possession of an authentic and unrivalled record of its national history.

The title "Mahawanso," which means literally the "*Genealogy of the Great*," properly belongs only to the first section of the work, extending from B.C. 543 to A.D. 301[1], and containing the history of the early kings, from Wijayo to Maha Sen, with whom the Singhalese consider the "Great Dynasty" to end. The author of this portion was Mahanamo, uncle of the king Dhatu Sena, in whose reign it was compiled, between the years A.D. 459 and 477, from annals in the vernacular language then existing at Anarajapoora.[2]

The sovereigns who succeeded Maha Sen are distinguished as the "Sulu-wanse," the "lower race," and the story of their line occupies the continuation of this extraordinary chronicle, the second portion of which was written by order of the illustrious king Prakrama Bahu, about the year A.D. 1266, and the narrative was carried on, under subsequent sovereigns, down to the year A.D. 1758, the latest chapters having been compiled by command of the King of Kandy, Kirti-

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[1] Although the *Mahawanso* must be regarded as containing the earliest *historical* notices of Ceylon, the island, under its Sanskrit name of Lanka, occupies a prominent place in the mythical poems of the Hindus, and its conquest by Rama is the theme of the *Ramayana*, one of the oldest epics in existence. In the *Raja-Tarangini* also, an historical chronicle which may be regarded as the *Mahawanso* of Kashmir, very early accounts of Ceylon are contained, and the historian records that the King Megavahana, who, according to the chronology of Troyer, reigned A.D. 24, made an expedition to Ceylon for the purpose of extending Buddhism, and visited Adam's Peak, where he had an interview with the native sovereign.—*Raja-Tarangini*, Book iii. sl. 71—79. *Ib.* vol. ii. p. 364.

[2] *Mahawanso*, ch. i. The early Arabian travellers in Ceylon mention the official historiographers employed by order of the kings. See Vol. I. Pt. III. ch. viii. p. 387, note.

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Sri, partly from Singhalese works brought back to the island from Siam (whither they had been carried at former periods by priests despatched upon missions), and partly from native histories, which had escaped the general destruction of such records in the reign of Raja Singha I., an apostate from Buddhism, who, about the year A.D. 1590, during the period when the Portuguese were in occupation of the low country, exterminated the priests of Buddha, and transferred the care of the shrine on Adam's Peak to Hindu Fakirs.

But the *Mahawanso*, although the most authentic, and probably the most ancient, is by no means the only existing Singhalese chronicle. Between the 14th and 18th centuries several historians recorded passing events; and as these corroborate and supplement the narrative of the greater work, they present an uninterrupted Historical Record of the highest authenticity, comprising the events of nearly twenty-four centuries.[1]

From the data furnished by these, and from corroborative sources[2], Turnour, in addition to many elaborate contributions drawn from the recesses of Pali learning in elucidation of the chronology of India, was

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[1] In 1833 Upham published, under the title of *The Sacred and Historical Books of Ceylon*, translations of what professed to be authentic copies of the *Mahawanso*, the *Rajaratnacari* and *Rajavali*; prepared for the use of Sir Alexander Johnston when Chief-Justice of the island. But Turnour, in the introduction to his masterly translation of the *Mahawanso*, has shown that Sir Alexander had been imposed upon, and that the alleged transcripts supplied to him are imperfect as regards the original text and unfaithful as translations. Of the *Mahawanso* in particular, Mr. Turnour says, in a private letter which I have seen, that the early part of Upham's volume "is not a translation but a compendium of several works, and the subsequent portions a mutilated abridgment." The *Rajavali*, which is the most valuable of these volumes, was translated for Sir Alexander Johnston by Mr. Dionysius Lambertus Pereira, who was then Interpreter-Moodliar to the Cutchery at Matura. These English versions, though discredited as independent authorities, are not without value in so far as they afford corroborative support to the genuine text of the *Mahawanso*, and on this account I have occasionally cited them.

[2] Besides the *Mahawanso*, *Rajaratnacari*, and *Rajavali*, the other native chronicles relied on by Turnour in compiling his epitome were the *Pujavali*, composed in the thirteenth century, the *Neekaaysangraha*, written A.D. 1347, and the *Account of the Embassy to Siam* in the reign of Raja Singha II., A.D. 1739–47, by WILBAAGEDERE MUDIANSE.

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enabled to prepare an *Epitome of the History of Ceylon*, in which he has exhibited the succession and genealogy of one hundred and sixty-five kings, who filled the throne during 2341 years, extending from the invasion of the island from Bengal, by Wijayo, in the year B.C. 543 to its conquest by the British in 1798. In this work, after infinite labour, he has succeeded in condensing the events of each reign, commemorating the founders of the chief cities, and noting the erection of the great temples and Buddhist monuments, and the construction of some of those gigantic reservoirs and works for irrigation, which, though in ruins, arrest the traveller in astonishment at their stupendous dimensions. He thus effectually demonstrated the misconceptions of those who previously believed the literature of Ceylon to be destitute of historic materials.[1]

Besides evidence of a less definite character, there is one remarkable coincidence which affords grounds for confidence in the faithfulness of the purely historic portion of the Singhalese chronicles; due allowance being made for that exaggeration of style which is apparently inseparable from oriental recital. The circumstance alluded to is the mention in the *Mahawanso* of the Chandragupta, so often alluded to by the Sanskrit writers, who, as Sir William Jones was the first to discover, is identical with Sandracottus or Sandracoptus, the King of the Prasii, to whose court, on the banks of the Ganges, Megasthenes was accredited as an ambassador from Seleucus Nicator, about 323 years before Christ. Along with a multitude of facts relating to

[1] By the help of TURNOUR's translation of the *Mahawanso* and the versions of the *Rajaratnacari* and *Rajavali*, published by Upham, two authors have since expanded the *Epitome* of the former into something like a connected narrative, and those who wish to pursue the investigation of the early story of the island, will find facilities in the *History of Ceylon*, published by KNIGHTON in 1845, and in the first volume of *Ceylon and its Dependencies*, by PRIDHAM, London, 1849. To facilitate reference I have appended a *Chronological List of Singhalese Sovereigns*, compiled from the historical epitome of Turnour. See Note B. at the end of this chapter.

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Ceylon, the *Mahawanso* contains a chronologically connected history of Buddhism in India from B.C. 590 to B.C. 307, a period signalized in classical story by the Indian expedition of Alexander the Great, and by the Embassy of Megasthenes to Palibothra,—events which in their results form the great link connecting the histories of the West and East, but which have been omitted or perverted in the scanty and perplexed annals of the Hindus, because they tended to the exaltation of Buddhism, a religion loathed by the Brahmans.

The Prasii, or people of Magadha, occupy a prominent place in the history of Ceylon, inasmuch as Gotama Buddha, the great founder of the faith of its people, was a prince of that country, and Mahindo, who finally established the Buddhist religion amongst them, was the great-grandson of Chandagutto, a prince whose name thus recorded in the *Mahawanso*[1] (notwithstanding a chronological discrepancy of about sixty years), may with little difficulty be identified with the "Chandragupta" of the Hindu Purana, and the "Sandracottus" of Megasthenes.

This is one out of the many coincidences which demonstrate the authenticity of the ancient annals of Ceylon; and from sources so venerable, and materials so abundant, I propose to select a few of the leading events, sufficient to illustrate the origin, and explain the influence of institutions and customs which exist at the present day in Ceylon, and which, from time immemorial, have characterised the inhabitants of the island.

NOTE (A.)

ANCIENT MAP OF CEYLON.

So far as I am aware, no map has ever been produced, exhibiting the comparative geography of Ceylon, and placing its modern names in juxtaposition with their Sanskrit and Pali

[1] *Mahawanso,* ch. v. p. 21. See also WILSON'S *Notes to the Vishnu Purána,* p. 468.

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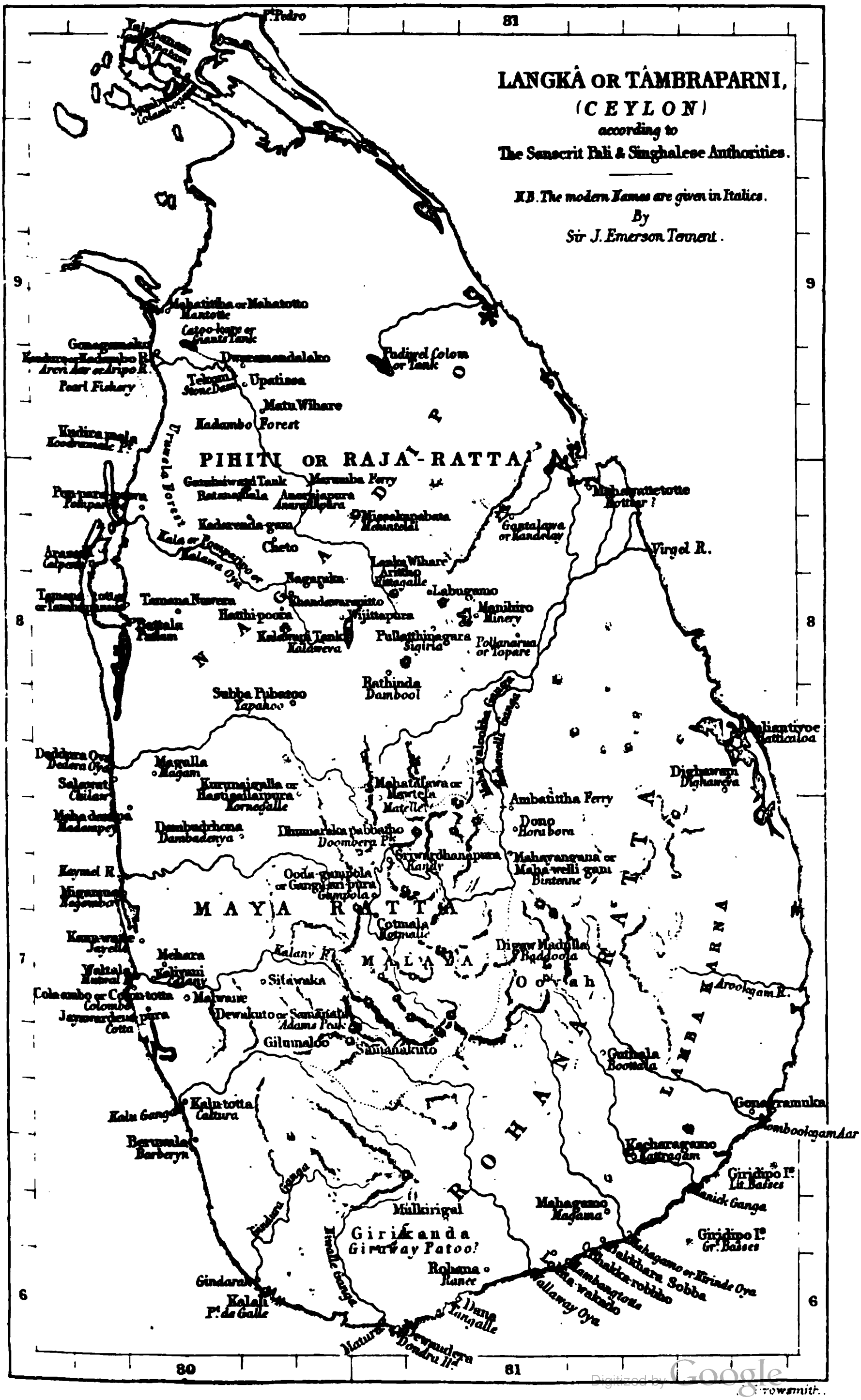

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originals. In the comprehensive plan which Burnouf had drawn up for an exposition of the history of the island, in elucidation of the progress of Buddhism in India, he intended to include a chart to exhibit its archæological divisions and localities; and in the only portion of the work which he lived to complete, and which was published, after his decease, by M. Jules Mohl, under the title of *Recherches sur la Géographie ancienne de Ceylon*, in the *Journal Asiatique* for January, 1857, he has enlarged upon the necessity of such a chart, and the difficulties likely to attend its construction. He had discovered that many names of historic interest had utterly disappeared from the modern map, or become so changed as to be scarcely recognisable, and that Sanskrit words especially had been so superseded by Singhalese as to be no longer susceptible of identification; so that, in order to trace the events of which Ceylon was the theatre, between the fourth and the seventh centuries, he found himself obliged to construct a map in which it was his design to restore the ancient nomenclature, and correct the corrupted orthography where it had not been altogether obliterated.

This task Burnouf appears to have commenced, but death interrupted its progress; and he left behind only some manuscript materials, consisting of lists of the names of those towns and villages, the great majority of which he had found it impossible to identify. These papers have been confided to me by his literary executor, M. Jules Mohl, and by their help and the aid of similar collections made by Turnour and others, I have ventured to produce the map which accompanies this chapter, and which, notwithstanding the omission of a great number of names that it is no longer possible to place, fixes, with at least comparative accuracy, the principal localities, mountains, rivers, and cities mentioned in the *Mahawanso*, the *Rajavali*, and *Rajaratnacari*. The names wanting are chiefly those of villages, tanks, and wiharas, which, although occurring frequently in the ecclesiastical portion of these chronicles, are of little political or historic importance.

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NOTE (B.)

NATIVE SOVEREIGNS OF CEYLON.

N.B. The names of subordinate or cotemporary Princes are printed in *Italics*.

Names and Relationship of each succeeding Sovereign.	Capital.	Accession.
		B.C.
1. Wejaya, founder of the Wejayan dynasty	Tamananeuera	543
2. Upatissa 1st, minister—regent	Upatissaneuera	505
3. Panduwása, paternal nephew of Wejaya	ditto	504
Ráma — *brothers-in-law*	*Rámagona*	
Rohuna — *brothers-in-law*	*Rohuna*	
Diggaina — *brothers-in-law*	*Diggámadulla*	
Urawelli — *brothers-in-law*	*Mahawelligama*	
Anurádha — *brothers-in-law*	*Anurádhapoora*	
Wijitta — *brothers-in-law*	*Wijittapoora*	
4. Abhaya, son of Paduwása, dethroned	Upatissaneuera	474
Interregnum	. . . .	454
5. Pandukábhaya, maternal grandson of Panduwása	Anurádhapoora	437
6. Mutasiwa, paternal grandson	ditto	367
7. Devenipiatissa, second son	ditto	307
Mahanága, brother	*Mágama*	
Yatálatissa, son	*Kellania*	
Gotábhaya, son	*Mágama*	
Kellani-tissa, not specified	*Kellania*	
Káwan-tissa, son of Gotábhaya	*Mágama*	
8. Uttiya, fourth son of Mutasiwa	Anurádhapoora	267
9. Mahasiwa, fifth do.	ditto	257
10. Suratissa, sixth do. put to death	ditto	247
11. Séna and Guttika, foreign usurpers—put to death	ditto	237
12. Aséla, ninth son of Mutasiwa—deposed	ditto	215
13. Elála, foreign usurper—killed in battle	ditto	205
14. Dutugaimunu, son of *Káwantissa*	ditto	161
15. Saidaitissa, brother	ditto	137
16. Tuhl or Thullathanaka, younger son—deposed	ditto	119
17. Laiminitissa 1st or Lajjitissa, elder brother	ditto	119
18. Kalunna or Khallátanága, brother—put to death	ditto	109
19. Walagambáhu 1st or Wattagámini, brother—deposed	ditto	104
20. Pulahattha — Foreign usurpers—successively deposed and put to death.	ditto	103
Báyiha	ditto	100
Panayamárá	ditto	98
Peliyamárá	ditto	91
Dáthiya	ditto	90
21. Walagambáhu 1st, reconquered the kingdom	ditto	88
22. Mahadailitissa or Mahachula, son	ditto	76
23. Chora Nága, son—put to death	ditto	62
24. Kudá Tissa, son—poisoned by his wife	ditto	50
25. Anulá, widow	ditto	47
26. Makalantissa or Kallakanni Tissa, second son of Kudátissa	ditto	41
27. Bátiyatissa 1st or Bátikábhaya, son	ditto	19

Note.—The Singhalese vowels *a, e, i, o, u*, are to be pronounced as in French or Italian.

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Names and Relationship of each succeeding Sovereign.	Capital.	Accession.
		A. D.
28. Maha Dailiya Mána or Dáthika, brother	Anurádhapoora	9
29. Addagaimunu or Amanda Gámini, son—put to death	ditto	21
30. Kinihirridaila or Kanijáni Tissa, brother	ditto	30
31. Kudá Abhá or Chulábhaya, son	ditto	33
32. Singhawallí or Síwalli, sister — put to death	ditto	34
Interregnum	. . . .	35
33. Elluná or Ila Nága, maternal nephew of Addagaímunu	ditto	38
34. Sanda Muhuna or Chanda Mukha Síwa, son	ditto	44
35. Yasa Silo or Yatálakatissa, brother — put to death	ditto	52
36. Subha, usurper — put to death	ditto	60
37. Wahapp or Wasahba, descendant of Laiminitissa	ditto	66
38. Waknais or Wanka Násika, son	ditto	110
39. Gajábáhu 1st or Gámini, son	ditto	113
40. Mahalumáná or Mallaka Nága, maternal cousin	ditto	125
41. Bátiya Tissa 2nd or Bhátika Tissa, son	ditto	131
42. Chula Tissa or Kanitthatissa, brother	ditto	155
43. Kuhuna or Chudda Nága, son — murdered	ditto	173
44. Kudanáma or Kuda Nága, nephew — deposed	ditto	183
45. Kuda Siriná or Siri Nága 1st, brother-in-law	ditto	184
46. Waiwahairatissa or Wairatissa, son — murdered	ditto	209
47. Abhá Sen or Abhá Tissa, brother	ditto	231
48. Siri Nága 2nd, son	ditto	239
49. Weja Indu or Wejaya 2nd, son—put to death	ditto	241
50. Sangatissa 1st, descendant of Laiminitissa—poisoned	ditto	242
51. Dahama Sirisanga Bo or Sirisanga Bodhi 1st, do. do. — deposed	ditto	246
52. Golu Abhá, Gothábhaya or Megha warna Abhaya, do. do.	ditto	248
53. Makalan Detu Tissa 1st, son	ditto	261
54. Maha Sen, brother	ditto	275
55. Kitsiri Maiwan 1st or Kirtisri Megha warna, son	ditto	302
56. Detu Tissa 2nd, brother	ditto	330
57. Bujas or Budha Dása, son	ditto	339
58. Upatissa 2nd, son	ditto	368
59. Maha Náma, brother	ditto	410
60. Senghot or Sotthi Sena, son — poisoned	ditto	432
61. Laimini Tissa 2nd or Chatagáhaka, descendant of Laiminitissa	ditto	432
62. Mitta Sena or Karalsora, not specified — put to death	ditto	433
63. Pándu } 24.9.—Foreign usurpers	ditto	434
Párinda Kuda	ditto	439
Khudda Párinda	ditto	455
Dátthiya	ditto	455
Pitthiya	ditto	458
64. Dásenkelleya or Dhátu Séna, descendant of the original royal family — put to death	ditto	459
65. Sígiri Kasumbu or Kásyapa 1st, son — committed suicide	Sígiri Galla Neuera	477

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Names and Relationship of each succeeding Sovereign.	Capital.	Accession.
		A.D.
66. Mugallána 1st, brother	Anurádhapoora .	495
67. Kumára Dás or Kumára Dhátu Séna, son—immolated himself	ditto . . .	512
68. Kirti Séna, son — murdered	ditto . . .	522
69. Maidi Síwu or Síwaka, maternal uncle—murdered	ditto . . .	531
70. Laimini Upátissa 3rd, brother-in-law . .	ditto . . .	531
71. Ambaherra Salamaiwan or Silákála, son-in-law	ditto . . .	534
72. Dápulu 1st or Dátthápa Bhodhi, second son — committed suicide	ditto . . .	547
73. Dalamagalan or Mugallána 2nd, elder brother	ditto	547
74. Kuda Kitsiri Maiwan 1st or Kirtisri Meghawarna, son — put to death	ditto . . .	567
75. Senewi or Maha Nága, descendant of the Okáka branch	ditto . . .	586
76. Aggrabodhi 1st or Akbo, maternal nephew .	ditto . . .	589
77. Aggrabodhi 2nd or Sula Akbo, son-in-law .	ditto . . .	623
78. Sanghatissa, brother — decapitated . .	ditto . . .	633
79. Buna Mugalan or Laimini Bunáya, usurper — put to death	ditto . . .	633
80. Abhasiggáhaka or Asiggáhaka, maternal grandson	ditto . . .	639
81. Siri Sangabo 2nd, son — deposed . .	ditto . . .	648
82. Kaluna Detutissa or Laimina Katuriya, descendant of Laiminitissa — committed suicide	Dewuneura or Dondera . .	648
Siri Sangabo 2nd, restored, and again deposed	Anurádhapoora .	649
83. Dalupiatissa 1st or Dhatthopatissa, Laimini branch — killed in battle	ditto . . .	665
84. Paisulu Kasumbu or Kásyapa 2nd, brother of Sirisangabo	ditto . . .	677
85. Dapulu 2nd, Okáka branch — deposed .	ditto . . .	686
86. Dalupiatissa 2nd or Hattha-Datthopatissa, son of Dalupiatissa 1st	ditto . . .	693
87. Paisulu Siri Sanga Bo 3rd or Aggrabodhi, brother	ditto . . .	702
88. Walpitti Wasidata or Dantanáma, Okáka branch	ditto . . .	718
89. Hununaru Riandalu or Hatthadátha, original royal family — decapitated . .	ditto . . .	720
90. Máhalaipánu or Mánawamma, do. do. .	ditto . . .	720
91. Kásiyappa 3rd or Kasumbu, son . .	ditto . . .	726
92. Aggrabodhi 3rd or Akbo, nephew . .	Pollonnarrua .	729
93. Aggrabodhi 4th or Kudá Akbo, son . .	ditto . . .	769
94. Mahindu 1st or Salamaiwan, original royal family	ditto . . .	775
95. Dappula 2nd, son	ditto . . .	795
96. Mahindu 2nd or Dharmika-Sílámaiga, son .	ditto . . .	800
97. Aggrabodhi 5th or Akbo, brother . .	ditto . . .	804
98. Dappula 3rd or Kudá Dappula, son . .	ditto . . .	815
99. Aggrabodhi 6th, cousin	ditto . . .	831
100. Mitwella Sen or Silámaiga, son . . .	ditto . . .	838
101. Kásiyappa 4th or Máganyin Séna or Mihindu, grandson	ditto . . .	858
102. Udaya 1st, brother	ditto . . .	891

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Names and Relationship of each succeeding Sovereign.	Capital.	Accession.
		A.D.
103. Udaya 2nd, son	Pollonnarrua	926
104. Kásiyappa 5th, nephew and son-in-law	ditto	937
105. Kásiyappa 6th, son-in-law	ditto	954
106. Dappula 4th, son	ditto	964
107. Dappula 5th, not specified	ditto	964
108. Udaya 3rd, brother	ditto	974
109. Séna 2nd, not specified	ditto	977
110. Udaya 4th, do. do.	ditto	986
111. Séna 3rd, do. do.	ditto	994
112. Mihindu 3rd, do. do.	ditto	997
113. Séna 4th, son — minor	ditto	1013
114. Mihindu 4th, brother — carried captive to India during the Sollean conquest	Anurádhapoora	1023
Interregnum Sollean viceroyalty	Pollonnarrua	1059
Maha Lai or Maha Lála Kirti (*Subordinate native kings during the Sollean viceroyalty.*)	*Rohuna*	
Wikrama Pándi	*Kalutotta*	
Jagat Pándi or Jagati Pála	*Rohuna*	
Prákrama Pándi or Prákrama Báhu	*ditto*	
Lokaiswara	*Kácharagama*	
115. Wejayabáhu 1st or Sirisangabo 4th, grandson of Mihindu 4th	Pollonnarrua	1071
116. Jayabáhu 1st, brother	ditto	1126
117. Wikramabáhu 1st (A disputed succession)	ditto	1127
Mánábarana (A disputed succession)	*Rohuna*	1127
118. Gajábáhu 2nd (A disputed succession)	Pollonnarrua	1127
Siriwallaba or Kitsiri Maiwan (A disputed succession)	*Rohuna*	1127
119. Prákrama Báhu 1st, son of Mánábarana	Pollonnarrua	1153
120. Wejayabáhu 2nd, nephew — murdered	ditto	1186
121. Mihindu 5th or Kitsen Kisdás, usurper — put to death	ditto	1187
122. Kirti Nissanga, a prince of Kálinga	ditto	1187
Wírabáhu, son — put to death	ditto	1196
123. Wikramabáhu 2nd, brother of Kirti Nissanga — put to death	ditto	1196
124. Chondakanga, nephew — deposed	ditto	1196
125. Lílawátí, widow of Prákramabáhu — deposed	ditto	1197
126. Sáhasamallawa, Okáka branch — deposed	ditto	1200
127. Kalyánawati, sister of Kirti Nissanga	ditto	1202
128. Dharmásóka, not specified — a minor	ditto	1208
129. Nayaanga or Níkanga, minister — put to death	ditto	1209
Lílawatí, restored, and again deposed	ditto	1209
130. Lokaiswera 1st, usurper — deposed	ditto	1210
Lílawatí, again restored, and deposed a third time	ditto	1211
131. Pandi Prákrama Báhu 2nd, usurper — deposed	ditto	1211
132. Mágha, foreign usurper	ditto	1214
133. Wejayabáhu 3rd, descendant of Sirisangabo 1st	Dambadenia	1235
134. Kalikála Sahitya Sargwajnya or Pandita Prakrama Báhu 3rd, son	ditto	1266
135. Bosat Wejaya Báhu 4th, son	Pollonnarrua	1301

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Names and Relationship of each succeeding Sovereign.	Capital.	Accession.
		A.D.
Bhuwaneka Báhu	*Yapahu or Subbapabatto*	
136. Bhuwaneka Báhu 1st, brother . . .	ditto . . .	1303
137. Prákrama Báhu 3rd, son of Bosat Wejayabáhu	Pollonnarrua .	1314
138. Bhuwaneka Báhu 2nd, son of Bhuwaneka Báhu	Kurunaigalla or Hastisailapoora	1319
139. Pandita Prákrama Báhu 4th, not specified .	ditto	
140. Wanny Bhuwaneka Báhu 3rd, do. .	ditto	
141. Wejaya Báhu 5th, do. .	ditto	
142. Bhuwaneka Báhu 4th, do. .	Gampola or Gangaasiripoora. .	1347
143. Prákrama Báhu 5th, do. .	ditto . . .	1361
144. Wikram Báhu 3rd, cousin	Partly at Kandy or Sengadagalla Neuera	1371
145. Bhuwaneka Báhu 5th, not specified . .	Gampola or Gangásiripoora .	1378
146. Wejaya Báhu 5th, or Wíra Báhu, do. . .	ditto . . .	1398
147. Sri Prákrama Báhu 6th, do. . .	Kotta or Jayawardanapoora . .	1410
148. Jayabáhu 2nd, maternal grandson — put to death	ditto . . .	1462
149. Bhuwaneka Báhu 6th, not specified . .	ditto . . .	1464
150. Pandita Prákrama Báhu 7th, adopted son . .	ditto . . .	1471
151. Wíra Prákrama Báhu 8th, brother of Bhuwaneka Báhu 6th	ditto . . .	1485
152. Dharma Prákrama Báhu 9th, son . .	ditto . . .	1505
153. Wejaya Báhu 7th, brother — murdered .	ditto . . .	1527
Jayawíra Bandára	*Gampola*	
154. Bhuwaneka Báhu 7th, son	Kotta . . .	1534
Máyádunnai	*Setawacca*	
Raygam Bandára	*Raygam*	
Jayawíra Bandára	*Kandy*	
155. Don Juan Dharmapála	Kotta . . .	1542
A Malabar	*Yapahu*	
Portuguese	*Colombo*	
Wídiye Rája	*Pailainda Neuera*	
Rája Singha	*Aiwissáwelle*	
Idirimáné Suriya	*Seven Korles*	
Wikrama Báhu, descendant of Sirisangabo 1st	*Kandy*	
156. Rája Singha 1st, son of *Máyádunnai* . .	Setawacca . .	1581
Jaya Suriya	*Setawacca*	
Wídiye Rája's queen	*ditto*	
157. Wimala Dharma, original royal family .	Kandy . . .	1592
158. Senáratana or Senarat, brother . . .	ditto . . .	1604
159. Rája-singha 2nd, son	ditto . . .	1637
Kumára-singa, brother	*Ouvah*	
Wejaya Pála, brother	*Matelle*	
160. Wimala Dharma Suriya 2nd, son of Rája-singa	Kandy . . .	1687
161. Sriwíra Prákrama Narendrasingha or Kundasála	ditto . . .	1707
162. Sriwejaya Rája Singha or Hanguranketta, brother-in-law	ditto . . .	1739
163. Kirtisri Rája Singha, brother-in-law . .	ditto . . .	1747
164. Rájádhi Rája Singha, brother	ditto . . .	1781
165. Sri Wikrema Rája Singha, son of the late king's wife's sister, deposed by the English in 1815, and died in captivity in 1832 .	ditto . . .	1798

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CHAP. II.

THE ABORIGINAL INHABITANTS OF CEYLON.

Divested of the insipid details which overlay them, the annals of Ceylon present comparatively few stirring incidents, and still fewer events of historic importance to repay the toil of their perusal. They profess to record no occurrence anterior to the advent of the last Buddha, the great founder of the national faith, who was born on the borders of Nepaul in the *seventh* century before Christ.

In the theoretic doctrines of Buddhism "*Buddhas*"[1] are beings who appear after intervals of inconceivable extent; they undergo transmigrations extending over vast spaces of time, accumulating in each stage of existence an increased degree of merit, till, in their last incarnation as men, they attain to a degree of purity so immaculate as to entitle them to the final exaltation of "Buddha-hood," a state approaching to incarnate divinity, in which they are endowed with wisdom so supreme as to be competent to teach mankind the path to ultimate bliss.

Their precepts, preserved orally or committed to writing, are cherished as *bana* or the "*word;*" their doctrines are incorporated in the system of *dharma* or "*truth;*" and, at their death, instead of entering on a new form of being, either corporeal or spiritual, they are absorbed into *Nirwana*, that state of blissful unconsciousness akin to annihilation which is regarded by Buddhists as the consummation of eternal felicity.

[1] A sketch of the Buddhist religion may be seen in Sir J. Emerson Tennent's *History of Christianity in Ceylon*, ch. v. London, 1850. But the most profound and learned dissertations on Buddhism as it exists in Ceylon, will be found in the works of the Rev. R. Spence Hardy, *Eastern Monachism*, Lond. 1850, and *A Manual of Buddhism*, Lond. 1853.

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Gotama, who is represented as the last of the series of Buddhas[1], promulgated a religious system in India which has exercised a wider influence over the Eastern world than the doctrines of any other uninspired teacher in any age or country.[2] He was born B.C. 624 at Kapila-Vastu (a city which has no place in the geography of the Hindus, but which appears to have been on the borders of Nepaul); he attained his superior Buddha-hood B.C. 588, under a bo-tree[3] in the forest of Urawela, the site of the present Buddha Gaya in Bahar; and, at the age of eighty, he died at Kusinara, a doubtful locality, which it has been sought to identify with the widely separated positions of Delhi, Assam, and Cochin China.[4]

In the course of his ministrations Gotama is said to have thrice landed in Ceylon. Prior to his first coming amongst them, the inhabitants of the island appear to have been living in the simplest and most primitive manner, supported on the almost spontaneous products of the soil. Gotama in person undertook their conversion, and alighted on the first occasion at Bintenne, where

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[1] There were twenty-four Buddhas previous to the advent of Gotama, who is the fourth in the present Kalpa or chronological period. His system of doctrine is to endure for 5000 years, when it will be superseded by the appearance and preaching of his successor.—*Rajaratnacari*, ch. i. p. 42.

[2] HARDY'S *Eastern Monachism*, ch. i. p. 1. There is evidence of the widely-spread worship of Buddha in the remotely separated individuals with whom it has been sought at various times to identify him. "Thus it has been attempted to show that Buddha was the same as Thoth of the Egyptians, and Turm of the Etruscans, that he was Mercury, Zoroaster, Pythagoras, the Woden of the Scandinavians, the Manes of the Manichæans, the prophet Daniel, and even the divine author of Christianity." (PROFESSOR WILSON, *Journ. Asiat. Soc.*, vol. xvi. p. 233.) Another curious illustration of the prevalence of his doctrines may be discovered in the endless variations of his name in the numerous countries over which his influence has extended: Buddha, Budda, Bud, Bot, Baoth, Buto, Budsdo, Bdho, Pout, Pote, Fo, Fod, Fohi, Fuh, Pet, Pta, Poot, Phthi, Phut, Pht, &c.—POCOCKE'S *India in Greece*, appendix, 397. HARDY'S *Buddhism*, ch. vii. p. 355. HARDY in his *Eastern Monachism* says, "There is no country in either Europe or Asia, *except those that are Buddhist*, in which the same religion is now professed that was there existent at the time of the Redeemer's death," ch. xxii. p. 327.

[3] The Pippul, *Ficus religiosa*.

[4] Professor H. H. WILSON has identified Kusinara or Kusinagara with *Kusia* in Gorakhpur, *Journ. Roy. Asiat. Soc.* vol. xvi. p. 246.

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there exists to the present day the remains of a monument erected two thousand years ago[1] to commemorate his arrival. His second visit was to Nagadipo in the north of the island, at a place whose position yet remains to be determined; and the "sacred foot-print" on Adam's Peak is still worshipped by his devotees as the miraculous evidence of his third and last farewell.

To the question as to what particular race the inhabitants of Ceylon at that time belonged, and whence or at what period the island was originally peopled, the Buddhist chronicles furnish no reply. And no memorials of the aborigines themselves, no monuments or inscriptions, now remain to afford ground for speculation. Conjectures have been hazarded, based on no sufficient data, that the Malayan type, which extends from Polynesia to Madagascar, and from Chin-India to Taheite, may still be traced in the configuration, and in some of the immemorial customs, of the people of Ceylon.[2]

But the greater probability is, that a branch of the same stock which originally colonised the Dekkan extended its migrations to Ceylon. All the records and traditions of the peninsula point to a time when its

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[1] By Dutugaimunu, B.C. 164. For an account of the present condition of this Dagoba at Bintenne, see Vol. II. P. IX. ch. ii.

[2] Amongst the incidents ingeniously pressed into the support of this conjecture is the use by the natives of Ceylon of those *double canoes* and *boats with outriggers*, which are never used on the Arabian side of India, but which are peculiar to the Malayan race in almost every country to which they have migrated; Madagascar and the Comoro islands, Sooloo, Luzon, the Society Islands, and Tonga. PRITCHARD's *Races of Man*, ch. iv. p. 17. For a sketch of this peculiar canoe, see Vol. II. P. VII. ch. i.

There is a dim tradition that the first settlers in Ceylon arrived from the coasts of China. It is stated in the introduction to RIBEYRO's *History of Ceylon*, but rejected by VALENTYN, ch. iv. p. 61.

The legend prefixed to RIBEYRO is as follows. "Si nous en croyons les historiens Portugais, les Chinois ont été les premiers qui ont habité cette isle, et cela arriva de cette manière. Ces peuples étoient les maîtres du commerce de tout l'orient; quelques unes de leurs vaisseaux furent portéz sur les basses qui sont près du lieu, que depuis on appelle Chilao par corruption au lieu de Cinilao. Les équipages se sauvèrent à terre, et trouvant le pais bon et fertile ils s'y établirent: bientôt après ils s'allièrent avec les Malabares, et les Malabares y envoyoient ceux qu'ils exiloient et qu'ils nominoient *Galas*. Ces exiles s'étant confondus avec les Chinois, de deux noms n'en ont fait qu'un, et se sont appellés *Chin-galas*

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nations were not Hindu; and in numerous localities[1], in the forests and mountains of the peninsula, there are still to be found the remnants of tribes who undoubtedly represent the aboriginal race.

The early inhabitants of India before their comparative civilisation under the influence of the Aryan invaders, like the aborigines of Ceylon before the arrival of their Bengal conquerors, are described as mountaineers and foresters who were "rakshas" or demon worshippers; a religion, the traces of which are to be found to the present day amongst the hill tribes in the Concan and Canara, as well as in Guzerat and Cutch. In addition to other evidences of the community of origin of these continental tribes and the first inhabitants of Ceylon; there is a manifest identity, not alone in their popular superstitions at a very early period, but in the structure of the national dialects, which are still prevalent both in Ceylon and Southern India. Singhalese, as it is spoken at the present day, and, still more strikingly, as it exists as a written language in the literature of the island, presents unequivocal proofs of an affinity with the group of languages still in use in the Dekkan; Tamil, Telingu, and Malayalim. But with these its identification is dependent on analogy rather than on structure, and all existing evidence goes to show that the period at which a vernacular dialect could have been common to the two countries must have been extremely remote.[2]

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et ensuite Chingalais."—RIBEYRO, *Hist. de Ceylan*, pref. du trad.

It is only necessary to observe in reference to this hypothesis that it is at variance with the structure of the Singhalese alphabet, in which *n* and *g* form but one letter. DE BARROS and DE COUTO likewise adhere to the theory of a mixed race, originating in the settlement of Chinese in the south of Ceylon, but they refer the event to a period subsequent to the seizure of the Singhalese king and his deportation to China in the fifteenth century. DE BARROS, Dec. iii. ch. i.; DE COUTO, Dec. v. ch. 5.

[1] LASSEN, *Indische Alterthumskunde*, vol. i. p. 199, 362.

[2] The *Mahawanso* (ch. xiv.) attests that at the period of Wijayo's conquest of Ceylon, B.C. 543, the language of the natives was different from that spoken by himself and his

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Though not based directly on either Sanskrit or Pali, Singhalese at various times has been greatly enriched from both sources, and especially from the former; and it is corroborative of the inference that the admixture was comparatively recent; and chiefly due to association with domiciliated strangers, that the further we go back in point of time the proportion of amalgamation diminishes, and the dialect is found to be purer and less alloyed. Singhalese seems to bear towards Sanskrit and Pali a relation similar to that which the English of the present day bears to the combination of Latin, Anglo-Saxon, and Norman French, which serves to form the basis of the language. As in our own tongue the words applicable to objects connected with rural life are Anglo-Saxon, whilst those indicative of domestic refinement belong to the French, and those pertaining to religion and science are borrowed from Latin [1]; so, in the language of Ceylon, the terms applicable to the national religion are taken from Pali, those of science and art from Sanskrit, whilst to pure Singhalese belong whatever expressions were required to denote the ordinary wants of mankind before society had attained organisation.[2]

Whatever momentary success may have attended the preaching of Buddha, no traces of his pious labours long survived him in Ceylon. The mass of its inhabitants were still aliens to his religion, when, on the day of his decease, B.C. 543, Wijayo [3], the discarded son of one

companions, which, as they came from Bengal, was in all probability Pali. Several centuries afterwards, A.D. 339, the dialect of the two races was still different, and some of the sacred writings were obliged to be translated from Paii into the Sihala language.—*Mahawanso*, ch. xxxvii. xxxviii. p. 247. At a still later period, A.D. 410, a learned priest from Magadha translated the Attah-Katha from Singhalese into Pali.—*Ib.* p. 253. See also DE ALWIS, *Sidath-Sangara*, p. 19.

[1] See TRENCH on the *Study of Words.*

[2] See DE ALWIS, *Sidath-Sangara*, p. xlviii.

[3] Sometimes spelled *Wejaya*. TURNOUR has demonstrated that the alleged concurrence of the death of Buddha and the landing of Wijayo is a device of the sacred annalists, in order to give a pious interest to the latter event, which took place about sixty years later. — Introd. *Mahawanso*, p. liii.

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B.C. 543. of the petty sovereigns in the valley of the Ganges[1], effected a landing with a handful of followers in the vicinity of the modern Putlam.[2] Here he married the

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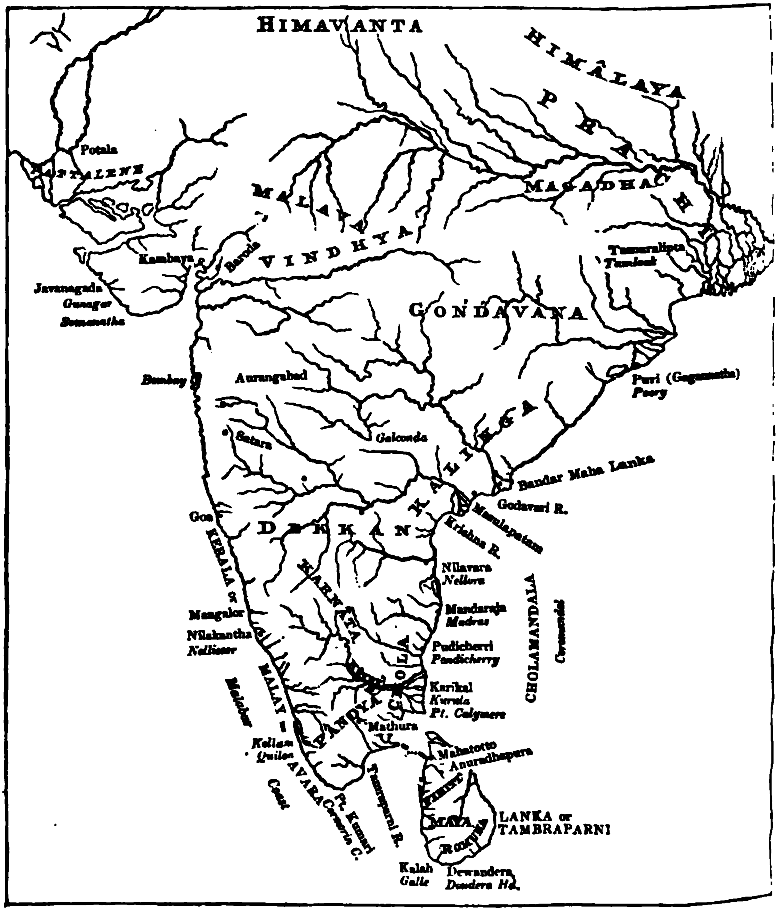
[1] To facilitate reference to the ancient divisions of India, a small map is subjoined, chiefly taken from Lassen's *Indische Alterthumskunde*.



MAP OF ANCIENT INDIA.

[2] Burnouf conjectures that the point from which Wijayo set sail for Ceylon was the Godavery, where the name of Bandar-maha-lanka (the Port of the Great Lanka), still commemorates the event.—*Journ. Asiat.* vol. xviii. p. 134. De Couto, recording the Singhalese tradition as collected by the Portuguese, says he landed at Preaturé (Pereatorre), be-

daughter of one of the native chiefs, and having speedily made himself master of the island by her influence, he established his capital at Tamana Neuera[1], and founded a dynasty, which, for nearly eight centuries, retained supreme authority in Ceylon. B.C. 543.

The people whom he mastered with so much facility are described in the sacred books as *Yakkhos* or "demons,"[2] and *Nagas*[3], or "snakes;" designation which the Buddhist historians are supposed to have employed in order to mark their contempt for the uncivilised aborigines[4], in the same manner that the aborigines in the Dekkan were denominated goblins and demons by the Hindus[5], from the fact that, like the Yakkhos of Ceylon, they too were demon worshippers. The Nagas, another section of the same superstition, worshipped the cobra de capello as an emblem of the destroying power. These appear to have chiefly inhabited the northern and western coasts of Ceylon, and the Yakkhos the interior[6]; and, notwithstanding their alleged barbarism, both had organised some form of government, however rude.[7] The Yakkhos had a capital which they called Lankapura, and the Nagas a king, the possession of whose "throne of gems"[8] was disputed by the rival sovereign of a neighbouring kingdom. So numerous were the followers of this gloomy idolatry of that time in Ceylon, that they gave the name of Nagadipo[9], *the*

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tween Trincomalie and Jaffna-patam, and that the first city founded by him was Mantotte.—*Decade* v. l. I. c. 5.

[1] See a note at the end of this chapter, on the landing of Wijayo in Ceylon, as described in the *Mahawanso*.

[2] *Mahawanso*, ch. vii.; FA HIAN, *Foë-kouë-ki*, ch. xxxvii.

[3] *Rajavali*, p. 169.

[4] REINAUD, Introd. to *Aboulfeda*, vol. i. sec. iii. p. ccxvi. See also CLOUGH's *Singhalese Dictionary*, vol. ii. p. 2.

[5] MOUNTSTUART ELPHINSTONE's *History of India*, b. iv. ch. xi. p. 216.

[6] The first descent of Gotama Buddha in Ceylon was amongst the Yakkhos at Bintenne; in his second visit be converted the "*Naga* King of Kalany," near Colombo, *Mahawanso*, ch. i. p. 5.

[7] FABER, *Origin of Idolatry*, b. ii. ch. vii. p. 440.

[8] *Mahawanso*, ch. i.

[9] TURNOUR was unable to determine the position on the modern map of the ancient territory of Nagadipo.—Introd. p. xxxiv. CASIE CHITTY, in a paper in the *Journal of the Ceylon Asiatic Society*, 1848, p. 71, endeavours to identify it with Jaffna. The *Rajaratnacari* places it at the

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B.C. 543. *Island of Serpents*, to the portion of the country which they held, in the same manner that Rhodes and Cyprus severally acquired the ancient designation of *Ophiusa*, from the fact of their being the residence of the Ophites, who introduced serpent-worship into Greece.[1]

But whatever were the peculiarities of religion which distinguished the aborigines from their conquerors, the attention of Wijayo was not diverted from his projects of colonisation by any anxiety to make converts to his own religious belief. The earliest cares of himself and his followers were directed to implant civilisation, and two centuries were permitted to elapse before the first effort was made to supersede the popular worship by the inculcation of a more intellectual faith.

NOTE.

DESCRIPTION IN THE MAHAWANSO OF THE LANDING OF WIJAYO.

THE landing of Wijayo in Ceylon is related in the 7th chapter of the *Mahawanso*, and Mr. TURNOUR has noticed the strong similarity between this story and Homer's account of the landing of Ulysses in the island of Circe. The resemblance is so striking that it is difficult to conceive that the Singhalese historian of the 5th century was entirely ignorant of the works of the Father of Poetry. Wijayo and his followers, having

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present Kalany, on the river of that name near Colombo (vol. ii. p. 22). The *Mahawanso* in many passages alludes to the existence of Naga kingdoms on the continent of India, showing that at that time serpent worship had not been entirely extinguished by Brahmanism in the Dekkan, and affording an additional ground for conjecture that the first inhabitants of Ceylon were a colony from the opposite coast of Calinga.

[1] BRYANT'S *Analysis of Mythology*, chapter on Ophiolatria, vol. i. p. 480, "Eubœa means *Oub-aia*, and signifies the serpent island." (*Ib.*)

But STRABO affords us a still more striking illustration of the *Mahawanso*, in calling the serpent worshippers of Ceylon "Serpents," since he states that in Phrygia and on the Hellespont the people who were styled ὀφιογενεῖς, or the Serpent races, actually retained a physical affinity with the snakes with whom they were popularly identified, "ἐνταῦθα μυθεύουσι τοὺς Ὀφιογενεῖς συγγένειάν τινα ἔχειν πρὸς τοὺς ὄφεις."—STRABO, lib. xiii. c. 588.

PLINY alludes to the same fable (lib. vii.). And OVID, from the incident of Cadmus' having sown the dragon's teeth (that is, implanted Ophiolatria in Greece), calls the Athenians *Serpentigenæ*.

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made good their landing, are met by a "devo" (a divine spirit), who blesses them and ties a sacred thread as a charm on the arm of each. One of the band presently discovers the princess in the person of a devotee, seated near a tank, and she being a magician (Yakkhini) imprisons him and eventually the rest of his companions in a cave. The *Mahawanso* then proceeds: "all these persons not returning, Wijayo, becoming alarmed, equipping himself with the five weapons of war, proceeded after them, and examined the delightful pond: he could perceive no footsteps but those leading down into it, and there he saw the princess. It occurred to him his retinue must surely have been seized by her, and he exclaimed, 'Pray, why dost not thou produce my attendants?' 'Prince,' she replied, 'from attendants what pleasure canst thou derive? drink and bathe ere thou departest.' Seizing her by the hair with his left hand, whilst with his right he raised his sword, he exclaimed, 'Slave, deliver my followers or die.' The Yakkhini terrified, implored for her life; 'Spare me, prince, and on thee will I bestow sovereignty, my love, and my service.' In order that he might not again be involved in difficulty he forced her to swear[1], and when he again demanded the liberation of his attendants she brought them forth, and declaring 'these men must be famishing,' she distributed to them rice and other articles procured from the wrecked ships of mariners, who had fallen a prey to her. A feast follows, and Wijayo and the princess retire to pass the night in an apartment which she causes to spring up at the foot of a tree, curtained as with a wall and fragrant with incense." It is impossible not to be struck with a curious resemblance between this description and that in the 10th book of the Odyssey, where Eurylochus, after landing, returns to Ulysses to recount the fate of his companions, who, having wandered towards the palace of Circe, had been imprisoned after undergoing transformation into swine. Ulysses hastens to their relief, and having been provided by Mercury with antidotes, which enabled him to resist the poisons of the sorceress, whom he discovers in her retreat, the story proceeds:—

> *Ὡς φάτ' ἐγὼ δ' ἄορ ὀξυ ἐρυσσάμενος παρά μηροῦ*
> *Κίρκῃ ἐπήιξα ὥστε κτάμεναι μενεαίνων. κ. τ. λ.*

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[1] *Εἰ μή μοι τλαίης γε, θεά, μέγαν ὅρκον ὀμόσσαι*
Μήτι μοι αὐτῷ πῆμα κακὸν βουλευσέμεν ἄλλο.—*Odys.* x. l. 343.

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"She spake, I, drawing from beside my thigh
The faulchion keen, with death denouncing looks,
Rush'd on her,—she, with a shrill scream of fear,
Ran under my raised arm, seized fast my knees;
And in winged accents plaintive thus began:—
'Who, whence thy city, and thy birth declare,—
Amazed I see thee with that potion drenched,
Yet unenchanted: never man before
Once passed it through his lips and lived the same.
* * * * Sheath again
Thy sword, and let us on my bed recline,
Mutual embrace, that we may trust henceforth
Each other without jealousy or fear.'
The goddess spake, to whom I thus replied:
'Oh Circe, canst thou bid me meek become,
And gentle, who beneath thy roof detain'st
My fellow-voyagers. * * *
No, trust me, never will I share thy bed,
Till first, oh goddess, thou consent to swear
That dread, all-binding oath, that other harm
Against myself thou wilt imagine none.'
I spake, she, swearing as I bade, renounced
All evil purpose, and her solemn oath
Concluded, I ascended next her bed." [1]

The story of Wijayo's interview with Kuweni is told in nearly the same terms as it appeared in the *Mahawanso* in the *Rajavali*, p. 172.

Another classical coincidence is curious: we are strongly reminded of Homer's description of the Syrens by the following passage, relative to the female *Rakshasis*, or demons, by whom Ceylon was originally inhabited, which is given in the memoirs of HIOUEN-THSANG, the Chinese traveller in the 7th century, as extracted by him from the Buddhist Chronicles. "Elles épiaient constamment les marchands qui abordaient dans l'isle, et se changeant en femmes d'une grande beauté elles venaient au-devant d'eux avec des fleurs odorantes et au son des instruments de musique, leur adressaient des paroles bienveillantes et les attiraient dans la ville de fer. Alors elles leur offraient un joyeux festin et se livraient au plaisir avec eux: puis elles les enfermaient dans un prison de fer et les mangeaient l'un après l'autre." [2]

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[1] COWPER'S *Odyssey*, B. x. p. 392.
[2] HIOUEN-THSANG, *Mém. des Péler. Boudd.* l. xi. p. 131.

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CHAP. III.

THE CONQUEST OF CEYLON BY WIJAYO, B. C. 543, AND THE ESTABLISHMENT OF BUDDHISM, B. C. 307.

THE sacred historians of Ceylon affect to believe in the assertion of some mysterious connection between the landing of Wijayo, and the conversion of Ceylon to Buddhism, one hundred and fifty years afterwards; and imply that the first event was but a pre-ordained precursor of the second.[1] The Singhalese narrative, however, admits that Wijayo was but a "lawless adventurer," who being expelled from his own country, was refused a settlement on the coast of India before he attempted Ceylon, which had previously attracted the attention of other adventurers. This story is in no way inconsistent with that told by the Chinese Buddhists, who visited the island in the fifth and seventh centuries. FA HIAN states, that even before the advent of Buddha, Ceylon was the resort of merchants, who repaired there to exchange their commodities for gems, which the "demons" and "serpents," who never appeared in person, deposited on the shore, with a specified value attached to each, and in lieu of them the strangers substituted certain indicated articles, and took their departure.[2] B.C. 543.

HIOUEN-THSANG, at a later period, disposes of the fables of Wijayo's descent from a lion[3], and of his

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[1] *Mahawanso,* ch. vii.

[2] FA HIAN, *Foë-Kouë-ki,* ch. xxxviii. See a notice of this story of FA HIAN, as it applies to the still existing habits of the Veddahs, Vol. I. P. III. ch. vii.

[3] The legend of Wijayo's descent from a lion, probably originated from his father being the son of an outlaw named "Singha."

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B.C. 543. divine mission to Ceylon, by intimating, that, according to certain authorities, he was the son of a merchant (meaning a sea-faring trader), who, having appeased the enmity of the Yakkhos, succeeded by his discretion in eventually making himself their king.[1]

Whatever may have been his first intentions, his subsequent policy was rather that of an agriculturist than an apostle. Finding the country rich and fertile, he invited merchants to bring their families, and take possession of it.[2] He dispersed his followers to form settlements over the island, and having given to his kingdom his patrimonial name of Sihala[3], he addressed himself to render his dominions "habitable for men."[4] He treated the subjugated race of Yakkhos with a despotic disdain, referable less to pride of caste than to contempt for the rude habits of the native tribes. He repudiated the Yakkho princess whom he had married, because her unequal rank rendered her unfit to remain the consort of a king[5]; and though she had borne him children, he drove her out before his second marriage with the daughter of an Indian sovereign, on the ground that the latter would be too timid to bear the presence of a being so inferior.[6]

B.C. 504. Leaving no issue to inherit the throne, he was succeeded by his nephew[7], who selected a relation of Gotama Buddha for his queen; and her brothers having dispersed themselves over the island, increased the number of petty kingdoms, which they were permitted to form in various districts[8], a policy which was freely encouraged by all the early kings, and which, though it served to

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1 "Suivant certains auteurs, Seng-kia-lo (Wijayo) serait le nom du fils d'un marchand, qui, par sa prudence, ayant échappé à la fureur homicide des *Lo-tsa*" (demons) "réussit ensuite à se faire Roi."—Hiouen Thsang, *Voyages*, *&c.* l. iv. p. 198.

2 Hiouen Thsang, ch. iv.

3 Whence Singhala (and Singhalese) Silan, Seylan, and Ceylon.

4 *Mahawanso*, ch. vii. p. 49. *Rajaratnacari*, ch. i.

5 *Mahawanso*, ch. vii. p. 51.

6 *Ibid.* p. 52.

7 B.C. 504.

8 *Mahawanso*, ch. vii. p. 51, ix. p. 57; *Rajavali*, part i. p. 177, 186; and Turnour's *Epitome*, p. 12, 14.

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accelerate colonisation and to extend the knowledge of agriculture, led in after years to dissensions, civil war, and disaster. It was at this period that Ceylon was resolved into the three geographical divisions, which, down to a very late period, are habitually referred to by the native historians. All to the north of the Mahawelli-ganga was comprised in the denomination *Pihiti*, or the Raja-ratta, from its containing the ancient capital and the residence of royalty; south of this was *Rohano* or *Rohuna*, bounded on the east and south by the sea, and by the Mahawelli-ganga and Kalu-ganga on the north and west; a portion of this division near Tangalle still retains the name of Roona.[1] The third was the *Maya-ratta*, which lay between the mountains, the two great rivers and the sea, having the Dedera-oya to the north, and the Kalu-ganga as its southern limit.

B.C. 504.

The patriarchal village system, which from time immemorial has been one of the characteristics of the Dekkan, and which still prevails throughout Ceylon in a modified form, was one of the first institutions organised by the successors of Wijayo. "They fixed the boundaries of every village throughout Lanka;"[2] they "caused the whole island to be divided into fields and gardens;"[3] and so uniformly were the rights of these rural municipalities respected in after times, that one of the Singhalese monarchs, on learning that merit attached to alms given from the fruit of the donor's own exertions, undertook to sow a field of rice, and "from the

[1] The district of Rohuna included the mountain zone of Ceylon, and hence probably its name, *rohuna* meaning the "act or instrument of ascending, as steps or a ladder." Adam's Peak was in the Maya division; but Edrisi, who wrote in the twelfth century, says, that it was then called "El Rahoun."—*Géographie, &c.* viii. JAUBERT's *Transl.* vol. ii. p. 71. *Rahu* is an ordinary name for it amongst Mahometan writers, and in the *Raja Tarangini*, it is called "Rohanam," b. iii. 56. 72.

[2] It was established by Pandukabhaya, A.D. 437.—*Mahawanso*, ch. x., p. 67., *Rajaratnacari*, ch. i.

[3] *Rajaratnacari*, ch. ii., *Rajavali*, b. i. p. 185.

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B.C. 504. portion derived by him as the cultivator's share," to bestow an offering on a "thero."[1]

From the necessity of providing food for their followers, the earliest attention of the Bengal conquerors was directed to the introduction and extension of agriculture. A passage in the *Mahawanso* would seem to imply, that previous to the landing of Wijayo, rice was imported for consumption[2], and upwards of two centuries later the same authority specifies "one hundred and sixty loads of hill-paddi,"[3] among the presents which were sent to the island from Bengal.

In a low and level country like the north of Ceylon, where the chief subsistence of the people is rice, a grain which can only be successfully cultivated under water, the first requisites of society are reservoirs and canals. The Buddhist historians extol the father of Wijayo for his judgment and skill "in forming villages in situations favourable for irrigation;"[4] his own attention was fully engrossed with the cares attendant on the consolidation of his newly acquired power; but the earliest public work undertaken by his successor Panduwasa, B.C. 504, was a tank, which he caused to be

B.C. 504. formed in the vicinity of his new capital Anarajapoora, the *Anurogrammum* of Ptolemy, originally a village founded by one of the followers of Wijayo.[5]

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[1] The king was Mahachula, 77 B.C. —*Mahawanso*, ch. xxxiv.

[2] Kuweni distributed to the companions of Wijayo, "rice and other articles, *procured from the wrecked ships of mariners*." (*Mahawanso*, ch. vii. p. 49.) A tank is mentioned as then existing near the residence of Kuweni; but it was only to be used as a bath. (*Ib.* c. vii. p. 48.) The *Rajaratnacari* also mentions that, in the fabulous age of the second Buddha, of the present Kalpa, there was a famine in Ceylon, which dried up the cisterns and fountains of the island. But there is no evidence of the existence of systematic tillage anterior to the reign of Wijayo.

[3] *Mahawanso*, ch. xi. p. 70. *Paddi* is rice before it has been freed from the husk.

[4] *Mahawanso*, ch. vi. p. 46.

[5] The first tank recorded in Ceylon is the Abayaweva, made by Panduwasa, B.C. 505 (*Mahawanso*, ch. ix. p. 57). The second was the Jayaweva, formed by Pandukabhaya, B.C. 437. (*Ib.* ch. x. p. 65.) The *third*, the Gamini tank, made by the same king at the same place, Anarajapoora. —*Ib.* ch. x. p. 66.

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The continual recurrence of records of similar contructions amongst the civil exploits of nearly every succeeding sovereign, together with the prodigious number formed, alike attests the unimproved condition of Ceylon, prior to the arrival of the Bengal invaders, and the indolence or ignorance of the original inhabitants, as contrasted with the energy and skill of their first conquerors. B.C. 307.

Upwards of two hundred years were spent in initiatory measures for the organisation of the new state. Colonists from the continent of India were encouraged by the facilities held out to settlers, and carriage roads were formed in the vicinity of the towns.[1] Village communities were duly organised, gardens were planted, flowers and fruit-bearing trees introduced [2], and the production of food secured by the construction of canals [3], and public works for irrigation. Moreover, the kings and petty princes attested the interest which they felt in the promotion of agriculture, by giving personal attention to the formation of tanks and to the labours of cultivation.[4] B.C. 307.

Meantime, the effects of Gotama's early visits had been obliterated, and the sacred trees which he planted were dead; and although the bulk of the settlers had come from countries where Buddhism was the dominant faith, no measures appear to have been taken by the immigrants to revive or extend it throughout Ceylon. Wijayo was, in all probability, a Brahman, but so in-

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[1] *Mahawanso*, ch. xiv. xv. xvi.

[2] *Mahawanso*, ch. xi. p. 60 (367 B.C.), ch. xxxiv. p. 211 (B.C. 20), ch. xxxv. p. 215 (A.D. 20). *Rajaratnacari*, ch. ii. p. 29. *Rajavali*, p. 185. 227.

[3] *Mahawanso*, ch. xxxiv. p. 210 (B.C. 42), ch. xxxv. p. 221, 222 (A.D. 275), ch. xxxvii. p. 238. *Rajaratnacari*, ch. ii. p. 49, and *Rajavali*, p. 223, &c.

[4] *Mahawanso*, ch. x. p. 61, xxii. p. 130, xxiv. p. 149. *Rajavali*, p. 185, 186. The Buddhist kings of Burmah, at the present day, in imitation of the ancient sovereigns of Ceylon, rest their highest claims to renown on the number of works for irrigation which they have either formed or repaired. See *Yule's Narrative of the British mission to Ava in* 1855, p. 106.

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B.C. 307. different to his own faith, that his first alliance in Ceylon was with a demon worshipper.[1] His immediate successors were so eager to encourage immigration, that they treated all religions with a perfect equality of royal favour. Yakkho temples were not only respected, but "annual demon offerings were provided" for them; halls were built for the worshippers of Brahma, and residences were provided at the public cost, for "five hundred persons of various foreign religious faiths;"[2] but no mention is made in the *Mahawanso* of a single edifice having been then raised for the worshippers of Buddha, whether resident in the island, or arriving amongst the colonists from India.

It was not till the year B.C. 307, in the reign of Tissa, that the preacher Mahindo ventured to visit Ceylon, under the auspices of the king, whom he succeeded in inducing to abstain from Brahmanical rites, and to profess faith in the doctrines of Buddha. From the prominent part thus taken by Tissa in establishing the national faith of Ceylon, the sacred writers honour his name with the prefix of *Déwánan-pia*, or "beloved of the saints."

The *Mahawanso* exhausts the vocabulary of ecstasy in describing the advent of Mahindó, a prince of Magadha, and a lineal descendant of Chandragutto. It records the visions by which he was divinely directed to "depart on his mission for the conversion of Lanka;" it describes his aërial flight, and his descent on Ambatthalo, the loftiest peak of Mihintala, the mountain which, rising suddenly from the plain, overlooks

[1] According to the *Mahawanso*, Vishnu, in order to protect Wijayo and his followers from the sorceries of the Yakkhos, met them on their landing in Ceylon, and "*tied threads on their arms*," ch. vii.; and at a later period, when the king Panduwasa, B.C. 504, was afflicted with temporary insanity, as a punishment in his person of the crime of perjury, committed by his predecessor Wijayo, *Iswara* was supplicated to interpose, and by his mediation the king was restored to his right mind.—*Rajavali*, p. 181.

[2] *Mahawanso*, ch. x. p. 67; ch. xxxiii. p. 203.

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the sacred city of Anarajapoora. The story proceeds to explain, how the king, who was hunting the elk, was miraculously allured by the fleeing game to approach the spot where Mahindo was seated[1]; and how the latter forthwith propounded the Divine doctrine "to the ruler of the land; who, at the conclusion of his discourse, together with his forty thousand followers, obtained the salvation of the faith."[2] B.C. 307.

Then follows the approach of Mahindo to the capital; the conversion of the queen and her attendants, and the reception of Buddhism by the nation, under the preaching of its great Apostle, who "thus became the luminary which shed the light of religion over the land." He and his sister Sanghamitta thenceforth devoted their lives to the organisation of Buddhist communities throughout Ceylon, and died in the odour of sanctity, in the reign of King Uttiya, B.C. 267.

But the grand achievement which consummated the establishment of the national faith, was the arrival from Magadha of a branch of the sacred Bo-tree. Every ancient race has had its sacred tree; the Chaldeans, the Hebrews[3], the Greeks, the Romans and the Druids, had each their groves, their elms and their oaks, under which to worship. Like them, the Brahmans have their *Kalpa tree* in Paradise, and the Banyan in the vicinity of their B.C. 289.

[1] The story, as related in the *Mahawanso*, bears a resemblance to the legend of St. Hubert and the stag, in the forest of Ardennes, and to that of St. Eustace, who, when hunting, was led by a deer of singular beauty towards a rock, where it displayed to him the crucifix upon its forehead; whence an appeal was addressed which effected his conversion. "The king Dewananpiyatissa departed for an elk hunt, taking with him a retinue; and in the course of the pursuit of the game on foot, he came to the Missa mountain. A certain devo, assuming the form of an elk, stationed himself there, grazing; the sovereign descried him, and saying 'it is not fair to shoot him standing,' sounded his bowstring, on which the elk fled to the mountain. The king gave chase to the flying animal, and, on reaching the spot where the priests were, the thero Mahindo came within sight of the monarch; but the metamorphosed deer vanished."—*Mahawanso*, c. xiv.

[2] *Mahawanso*, ch. xiv. p. 80.

[3] "They sacrifice upon the tops of mountains, and burn incense under oaks, and poplars, and elms, because the shadow thereof is good."—*Hosea*, iv. 13.

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B.C. 289. temples; and the Buddhists, in conformity with immemorial practice, selected as their sacred tree the Pippul, which is closely allied to the Banyan, yet sufficiently distinguished from it, to serve as the emblem of a new and peculiar worship.[1] It was whilst reclining under the shade of this tree in Uruwela, that Gotama received Buddhahood; hence its adoption as an object of reverence by his followers, and in all probability its adoration preceded the use of images and temples in Ceylon.[2]

In order that his kingdom might possess a sacred tree of the supremest sanctity, king Tissa solicited a branch of the identical tree under which Gotama reclined, from Asoca, who then reigned in Magadha. The difficulty of severing a portion without the sacrilegious offence of "lopping it with any weapon," was overcome by the miracle of the branch detaching itself spontaneously, and descending with its roots into the fragrant earth prepared for it in a golden vase, in which it was transported by sea to Ceylon[3], and planted by king Tissa in the spot at Anarajapoora, where, after the

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[1] The Bo-tree (*Ficus religiosa*) is the "pippul" of India. It differs from the Banyan (*F. indica*), by sending down no roots from its branches. Its heart-shaped leaves, with long attenuated points, are attached to the stem by so slender a stalk, that they appear in the profoundest calm to be ever in motion, and thus, like the leaves of the aspen, which, from the tradition that the cross was made of that wood, the Syrians believe to tremble in recollection of the events of the crucifixion, those of the Bo-tree are supposed by the Buddhists to exhibit a tremulous veneration, associated with the sacred scene of which they were the witnesses.

[2] Previous Buddhas had each his Bo-tree or Buddha-tree. The pippul had been before assumed by the first recorded Buddha; others had the iron-tree, the champac, the nipa, &c. —*Mahawanso,* TURNOUR's Introd. p. xxxii.

[3] The ceremonial of the mysterious severance of the sacred branch "amid the din of music, the clamours of men, the howling of the elements, the roar of animals, the screams of birds, the yells of demons, and the crash of earthquakes, is minutely described in an elaborate passage of the *Mahawanso.* And its landing in Ceylon, the retinue of its attendants, the homage paid to it, its progress to the capital, its arrival at the Northern-gate "at the hour when shadows are most extended," its reception by princes "adorned with the insignia of royalty," and its final deposition in the earth, under the auspices of Mahindo and his sister Sanghamitta, form one of the most striking episodes in that very singular book.—*Mahawanso,* ch. xviii. xix.

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lapse of more than 2000 years, it still continues to flourish and to receive the profound veneration of all Buddhist nations.[1] B.C. 289.

THE BO-TREE AT ANARAJAPOORA.

[1] The planting of the Bo-tree took place in the eighteenth year of the reign of King Devenipiatissa, B.C. 288; it is consequently at the present time 2147 years old.

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CHAP. IV.

THE EARLY BUDDHIST MONUMENTS.

B.C. 289. Almost simultaneously with the establishment of the Buddhist religion was commenced the erection of those stupendous ecclesiastical structures, the number and magnitude of whose remains form a remarkable characteristic in the present aspect of the country.

The architectural history of continental India dates from the third century before Christ; not a single building or sculptured stone having as yet been discovered there, of an age anterior to the reign of Asoca[1], who was the first of his dynasty to abandon the religion of Brahma for that of Buddha. In like manner the earliest existing monuments of Ceylon belong to the same period; they owe their construction to Devenipiatissa, and the historical annals of the island record with pious gratitude the series of dagobas, wiharas, and temples erected by him and his successors.

Of these the most remarkable are the Dagobas, piles of brickwork of dimensions so extraordinary that they suggest comparison with the pyramids of Memphis[2], the barrow of Halyattys[3], or the mounds in the valleys of the Tigris and Euphrates.

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[1] Fergusson, *Handbook of Architecture*, b. i. c. i. p. 5.

[2] So vast did the dagobas appear to the Singhalese that the author of the *Mahawanso*, in describing the construction of that called the *Ruanwelle* at Anarajapoora, states that each of the lower courses contained ten kotis (a koti being equal to 100 lacs) or 10,000,000 bricks.—*Mahawanso*, ch. xxx. p. 179.

[3] "The ancient edifices of Chi-Chen in Central America bear a striking resemblance to the topes of India. The shape of one of the domes, its apparent size, the small tower on the summit, the trees growing on the sides, the appearance of masonry here and there, the shape of the ornaments, and the small doorway at the base, are so exactly similar to what I had seen at Anarajapoora that when my eyes first fell on the engravings of these remarkable ruins I supposed that they were presented in illustration of the dagobas of Ceylon."—Hardy's *Eastern Monachism*, c. xix. p. 222.

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A dagoba (from *datu*, a relic, and *gabbhan*, a shrine [1]) is a monument raised to preserve one of the relics of Gotama, which were collected after the cremation of his body at Kusinara, and it is candidly admitted in the *Mahawanso* that the intention in erecting them was to provide "objects to which offerings could be made."[2] B.C. 289.

Ceylon contains but one class of these structures, and boasts no tall monolithic pillars like the *lats* of Delhi and Allahabad, and no regularly built columns similar to the *minars* of Cabul; but the fragments of the bones of Gotama, and locks of his hair, are enclosed in enormous masses of hemispherical masonry, modifications of which may be traced in every Buddhist country of Asia, in the topes of Affghanistan and the Punjaub, in the pagodas of Pegu, and in the Boro-Buddor of Java. Those of Ceylon consist of a bell-shaped dome of brick-work surmounted by a terminal or *tee* (generally in the form of a cube supporting a pointed spire), and resting on a square platform approached by flights of

A SMALL DAGOBA AT KANDY.

stone steps. Those, the ruins of which have been explored in modern times, have been found to be almost solid, en-

[1] *Deha*, "the body," and *gopa*, "what preserves;" because they enshrine hair, teeth, nails, &c. of Buddha. —WILSON'S *Asiat. Res.* vol. xvii. p. 605.

[2] *Mahawanso*, ch. xvii. p. 104.

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B.C. 289. closing a hollow vessel of metal or stone which had once contained the relic, but of which the ornament alone and a few gems or discoloured pearls set in gold, are usually all that is now discoverable.

Their outline exhibits but little of ingenuity or of art, and their construction is only remarkable for the vast amount of labour which must necessarily have been expended upon them. But, independently of this, the first dagoba erected at Anarajapoora, the Thuparamaya, which exists to the present day, "as nearly as may be in the same form in which it was originally designed, is possessed of a peculiar interest from the fact that it is in all probability the oldest architectural monument now extant in India."[1] It was raised by King Tissa, at the close of the third century before Christ, over the collar-bone of Buddha, which Mahindo had procured for the king.[2] In dimensions this monument is inferior to those built at a later period by the successors of Tissa, some of which are scarcely exceeded in diameter and altitude by the dome of St. Peter's[3]; but in elegance of outline it immeasurably surpassed all the other dagobas, and the beauty of its design is still perceptible in its ruins after the lapse of two thousand years.

The king, in addition to this, built a number of others in various parts of Ceylon[4], and his name has been perpetuated as the founder of temples, for the rites of the new religion, and of Wiharas or monasteries for the residence of its priesthood. The former were of the simplest design, for an atheistical system, which substitutes meditation for worship, dispenses with splendour in its edifices and pomp in its ceremonial.

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[1] Fergusson's *Handbook of Architecture*, b. i. c. iii. p. 43.

[2] *Mahawanso*, ch. xvii. The *Rajavali* calls it the jaw-bone, p. 184.

[3] The Abhayagiri dagoba at Anarajapoora, built B.C. 89, was originally 180 cubits high, which, taking the Ceylon cubit at 2 feet 3 inches, would be equal to 405 feet. The dome was hemispherical, and described with a radius of 180 feet, giving a circumference of 1130 feet. The summit of this stupendous work was therefore fifty feet higher than St. Paul's, and fifty feet lower than St. Peter's.

[4] Turnour's *Epitome*, p. 15.

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The images of Gotama, which in time became objects of veneration, were but a late innovation[1], and a doubt has even been expressed whether the religion of Buddha in its primitive constitution, rejecting as it does the doctrine of a mediatorial priesthood, contemplated the existence of any organised ministry. B.C. 289.

Caves, or insulated apartments in imitation of their gloom and retirement, were in all probability the first resort of devotees in Ceylon, and hence amongst the deeds of King Tissa, the most conspicuous and munificent were the construction of rock temples, on Mihintala, and of apartments for the priests in all parts of his dominions.[2]

The directions of Gotama as to the residence of his votaries are characterised by the severest simplicity, and the term "pansala," literally "a dwelling of leaves,"[3] by which the house of a priest is described to the present day, serves to illustrate the original intention that persons dedicated to his service should cultivate solitude and meditation by withdrawing into the forest, but within such a convenient distance as would not estrange them from the villagers, on whose bounty and alms they were to be dependent for subsistence.

In one of the rock inscriptions deciphered by Prinsep, King Asoca, in addressing himself to his Buddhist subjects, distinguishes them as "ascetics and *householders*." In the sacred books a laic is called a "graha pali," meaning "the ruler of a house;" and in contradistinction Fa Hian, the Chinese Buddhist, speaks of the priests of Ceylon under the designation of "the house-

[1] The precise date of their introduction is unknown, but the first mention of a statue occurs in an inscription on the rock at Mihintala, bearing date A.D. 240, and referring to the house constructed over a figure of Buddha.

[2] TURNOUR's *Epitome*, p. 15.

[3] It is questionable whether the Sarmanai, mentioned by Megasthenes, were Buddhists or Brahmans; but the account which he gives of the class of them whom he styles the Hylobii, would seem to identify them with the Sramanas of Buddhism, "passing their lives in the woods, ζῶντες ἐν ταῖς ὕλαις, living on fruits and seeds, and clothed with the bark of trees."—MEGASTHENES' *Indica*, &c., Fragm. xlii.

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B.C. 289. less," to mark their abandonment of social enjoyments.[1] Anticipating the probable necessity of their eventually resorting to houses for accommodation, Buddha directed that, if built for an individual, the internal measurement of a cell should be twelve spans in length by seven in breadth[2]; and, if restricted to such dimensions, the assertions of the Singhalese chronicles become intelligible as to the prodigious number of such dwellings said to have been raised by the early kings.[3]

But the multitudes who were thus attracted to a life of indolent devotion became in a short time so excessive that recourse was had to other devices for combining economy with accommodation, and groups of such cells were gradually formed into wiharas and monasteries, the inmates of which have uniformly preserved their organisation and order. Still the edifices thus constructed have never exhibited any tendency to depart from the primitive simplicity so strongly enjoined by their founder; and, down to the present time, the homes of the Buddhist priesthood are modest and humble structures, generally reared of mud and thatch, with no pretension to external beauty and no attempt at internal decoration.

To supply to the ascetics the means of seclusion and exercise, the early kings commenced the erection of ambulance-halls; and gardens were set apart for the use of the great temple communities. The *Mahawanso* describes, with all the pomp of Oriental diction, the ceremony observed by King Tissa on the occasion of setting apart a portion of ground as a site for the first wihara at his capital; the monarch in person, attended by standard bearers and guards with golden staves, having come to mark out the boundary with

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[1] "Les hommes hors de leur maisons." — FA HIAN, *Foë Kouë Ki*, ch. xxxix. This is the equivalent of the Singhalese term for the same class, *agariyan-pubbajito*, used in the Pittakas.

[2] HARDY'S *Eastern Monachism*, ch. xiii. p. 122.

[3] The *Rajaratnacari* says that Devenipiatissa caused *eighty-four thousand* temples to be built during his reign, p. 35.

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a plough drawn by elephants.[1] A second monastery was erected by him on the summit of Mihintala[2]; a third was attached to the dagoba of the Thuparamaya, and others were rapidly founded in every quarter of the island.[3] B.C. 289.

It was in all probability owing to the growth of these institutions, and the establishment of colleges in connection with them, that halls were eventually appropriated for the reception of statues; and that apartments so consecrated were devoted to the ceremonies and worship of Buddha. Hence, at a very early period, the dwellings of the priests were identified with the chaityas and sacred edifices, and the name of the Wihara came to designate indifferently both the temple and the monastery.

But the hall which contains the figures of Buddha, and which constitutes the "temple" proper, is always detached from the domestic buildings, and is frequently placed on an eminence from which the view is commanding. The interior is painted in the style of Egyptian chambers, and is filled with figures and illustrations of the legends of Gotama, whose statue, with hand uplifted in the attitude of admonition, or reclining in repose emblematic of the blissful state of Nirwana, is placed in the dimmest recess of the edifice. Here lamps cast a feeble light, and the air is heavy with the perfume of flowers, which are daily renewed by fresh offerings from the worshippers at the shrines.

In no other system of idolatry, ancient or modern, have the rites been administered by such a multitude of priests as assist in the passionless ceremonial of

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[1] *Mahawanso*, ch. xv. p. 99.

[2] *Mahawanso*, ch. xx. p. 123.

[3] Five hundred were built by one king alone, the third in succession from Devenipiatissa, B.C. 246 (*Mahawanso*, ch. xxi. p. 127). About the same period the petty chiefs of Rohuna and Mahagam were equally zealous in their devout labours, the one having erected sixty-four wiharas in the east of the island, and the other sixty-eight in the south.—*Mahawanso*, ch. xxiv. p. 145, 148.

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B.C. 289. Buddhism. Fa Hian, in the fourth century, was assured by the people of Ceylon that at that period the priests numbered between fifty and sixty thousand, of whom two thousand were attached to one wihara at Anarajapoora, and three thousand to another.[1]

As the vow which devotes the priests of Buddha to religion binds them at the same time to a life of poverty and mendicancy, the extension of the faith entailed in great part on the crown the duty of supporting the vast crowds who withdrew themselves from industry to embrace devotion and indigence. They were provided with food by the royal bounty, and hence the historical books make perpetual reference to the priests "going to the king's house to eat,"[2] when the monarch himself set the example to his subjects of "serving them with rice broth, cakes, and dressed rice."[3] Rice in all its varieties is the diet described in the *Mahawanso* as being provided for the priesthood by the munificence of the kings; "rice prepared with sugar and honey, rice with clarified butter, and rice in its ordinary form."[4] In addition to the enjoyment of a life of idleness, another powerful incentive conspired to swell the numbers of these devotees. The followers and successors of Wijayo

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[1] FA HIAN, *Foë Kouë Ki*, ch. xxxviii. p. 336, 350. At the present day the number in the whole island does not probably exceed 2500 (HARDY's *Eastern Monachism*, p. 57, 309). But this is far below the proportion of the Buddhist priesthood in other countries; in Siam nearly every adult male becomes a priest for a certain portion of his life; a similar practice prevails in Ava; and in Burmah so common is it to assume the yellow robe, that the popular expedient for effecting divorce is for the parties to make a profession of the priesthood, the ceremonial of which is sufficient to dissolve the marriage vow, and after an interval of a few months, they can throw off the yellow robe and are then at liberty to marry again.

[2] *Rajavali*, p. 189. Hiouen Thsang, the Chinese pilgrim, describing Anarajapoora in the seventh century, says: "A côté du palais du roi, on a construit une vaste cuisine où l'on prépare chaque jour des aliments pour dix-huit mille religieux. A l'heure de repas, les religieux viennent, un pot à la main, pour recevoir leur nourriture. Après l'avoir obtenue ils s'en retournent chacun dans leur chambre."—HIOUEN THSANG, *Transl.* M. JULIEN, lib. xi. tom. ii. p. 143.

[3] *Mahawanso*, ch. xiv. p. 82.

[4] *Mahawanso*, ch. xxxii.; *Rajaratnacari*, ch. i. p. 37, ch. ii. p. 56, 60, 62.

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preserved intact the institution of caste, which they had brought with them from the valley of the Ganges; and, although caste was not abolished by the teachers of Buddhism, who retained and respected it as a social institution, it was practically annulled and absorbed in the religious character;—all who embraced the ascetic life being simultaneously absolved from all conventional disabilities, and received as members of the sacred community with all its exalted prerogatives.[1]

B.C. 289.

Along with food, clothing consisting of three garments to complete the sacerdotal robes, as enjoined by the Buddhist ritual[2], was distributed at certain seasons; and in later times a practice obtained of providing robes for the priests by "causing the cotton to be picked from the tree at sunrise, cleaned, spun, woven, dyed yellow, and made into garments and presented before sunset."[3] The condition of the priesthood was thus reduced to a state of absolute dependency on alms, and at the earliest period of their history the vow of poverty, by which their order is bound, would seem to have been righteously observed.

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[1] Professor WILSON, *Journ. Roy. Asiat. Soc.* vol. xvi. p. 249.

[2] To avoid the vanity of dress or the temptation to acquire property, no Buddhist priest is allowed to have more than one set of robes, consisting of three pieces, and if an extra one be bestowed on him it must be surrendered to the chapter of his wihara within ten days. The dimensions must not exceed a specified length, and when obtained new the cloth must be disfigured with mud or otherwise before he puts it on. A magnificent robe having been given to Gotama, his attendant Ananda, in order to destroy its intrinsic value, cut it into thirty pieces and sewed them together in four divisions, so that the robe resembled the patches of a rice-field divided by embankments. And in conformity with this precedent the robes of every priest are similarly dissected and reunited.—HARDY'S *Eastern Monachism*, c. xii. p. 117; *Rajaratnacari*, ch. ii. p. 60, 66.

[3] *Rajaratnacari*, p. 104, 109, 112. The custom which is still observed in Ceylon, of weaving robes between sunrise and sunset is called *Catina dhwana* (*Rajavali*, p. 261). The work is performed chiefly by women, and the practice is identical with that mentioned by Herodotus, as observed by the priests of Egypt, who celebrated a festival in honour of the return of Rhampsinitus, after playing at dice with Ceres in Hades, by investing one of their body with a cloak made in a single day, φᾶρος αὐτημερὸν ἐξυφήναντες, *Euterpe*, cxxii. GRAY, in his ode of *The Fatal Sisters*, has embodied the Scandinavian myth in which the twelve weird sisters, the *Valkiriur*, weave "the crimson web of war" between the rising and setting of the sun.

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CHAP. V.

SINGHALESE CHIVALRY.—ELALA AND DUTUGAIMUNU.

B.C. 289. For nearly a century after the accession of Devenipiatissa, the religion and the social development of Ceylon thus exhibited an equally steady advancement. The
B.C. 266. cousins of the king, three of whom ascended the throne in succession, seem to have vied with each other in works of piety and utility. Wiharas were built in all parts of the island, both north and south of the Mahawelli-ganga. Dagobas were raised in various places, and cultivation was urged forward by the formation of tanks and canals. But, during this period, from the fact of the Bengal immigrants being employed in more congenial or more profitable occupations (possibly also from the numbers who were annually devoting themselves to the service of the temples), and from the ascertained inaptitude of the native Singhalese to bear arms; a practice was commenced of retaining foreign mercenaries, which, even at that early period, was productive of animosity and bloodshed, and in process of time led to the overthrow of the Wijayan dynasty and the gradual decay of the Sinhala sovereignty.

The genius of the Gangetic race, which had taken possession of Ceylon, was essentially adapted to agricultural pursuits — in which, to the present day, their superiority is apparent over the less energetic tribes of the Dekkan. Busied with such employments, the early colonists had no leisure for military service; besides, whilst Devenipiatissa and his successors were earnestly engaged in the formation of religious communities, and the erection of sacred edifices in the

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northern portion of the island, various princes of the B.C.
same family occupied themselves in forming settlements 266.
in the south and west; and hence, whilst their people were zealously devoted to the service and furtherance of religion, the sovereign at Anarajapoora was compelled, through a combination of causes, to take into his pay a body of Malabars[1] for the protection both of the coast and the interior. Of the foreigners thus confided in, "two youths, powerful in their cavalry and navy, named Sena and Gottika,"[2] proved unfaithful to their trust, and after causing the death of the king Suratissa (B.C. 237), B.C.
retained the supreme power for upwards of twenty years, 237.
till overthrown in their turn and put to death by the adherents of the legitimate line.[3] Ten years, however, had barely elapsed when the attempt to establish a Tamil sovereign was renewed by Elala, "a Malabar of the illustrious Uju tribe, who invaded the island from the B.C.
Chola[4] country, killed the reigning king Asela, and ruled 205.
the kingdom for forty years, administering justice impartially to friends and foes."

Such is the encomium which the *Mahawanso* passes B.C.
on an infidel usurper, because Elala offered his protection 161.
to the priesthood; but the orthodox annalist closes his notice of his reign by the moral reflection that "even he who was an heretic, and doomed by his creed to perdition, obtained an exalted extent of supernatural power from having eschewed impiety and injustice."[5]

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[1] The term "Malabar" is used throughout the following pages in the comprehensive sense in which it is applied in the Singhalese chronicles to the continental invaders of Ceylon; but it must be observed that the adventurers in these expeditions, who are styled in the *Mahawanso*, '*damilos*' or Tamils, came not only from the south-western tract of the Dekkan, known in modern geography as "Malabar," but also from all parts of the peninsula, as far north as Cuttack and Orissa.

[2] *Mahawanso*, ch. xxi. p. 127.

[3] *Mahawanso*, xxi.; *Rajaratnacari*, ch. ii.

[4] Chola, or Solee, was the ancient name of Tanjore, and the country traversed by the river Caveri.

[5] *Mahawanso*, xxi. p. 129. The other historical books, the *Rajavali*, and *Rajaratnacari*, give a totally different character of Elala, and represent him as the desecrator of monuments and the overthrower of temples. The traditional estimation which has followed his memory is the best attestation of the superior accuracy of the *Mahawanso*.

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B.C. 161. But it was not the priests alone who were captivated by the generosity of Elala. In the final struggle for the throne, in which the Malabars were worsted by the gallantry of Dutugaimunu, a prince of the excluded family, the deeds of bravery displayed by him were the admiration of his enemies. The contest between the rival chiefs is the solitary tale of Ceylon chivalry, in which Elala is the Saladin and Dutugaimunu the Cœur-de-lion. So genuine was the admiration of Elala's bravery that his rival erected a monument in his honour, on the spot where he fell; its ruins remain to the present day, and the Singhalese still regard it with respect and veneration. "On reaching the quarter of the city in which it stands," says the *Mahawanso*[1], "it has been the custom for the monarchs of Lanka to silence their music, whatsoever procession they may be heading;" and so uniformly was the homage continued down to the most recent period, that so lately as 1818, on the suppression of an attempted rebellion, when the defeated aspirant to the throne was making his escape by Anarajapoora, he alighted from his litter, on approaching the quarter in which the monument was known to exist, "and although weary and almost incapable of exertion, not knowing the precise spot, he continued on foot till assured that he had passed far beyond the ancient memorial."[2]

Dutugaimunu, in the epics of Buddhism, enjoys a renown, second only to that of King Tissa, as the champion of the faith. On the recovery of his kingdom he addressed himself with energy to remove the effects produced in the northern portions of the island by forty years of neglect and inaction under the sway of Elala. During that monarch's protracted usurpation the minor sovereignties, which had been formed in various parts of the island prior to his seizure of the crown, were

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[1] *Mahawanso*, ch. xxi.
[2] Forbes' *Eleven Years in Ceylon*, vol. i. p. 233.

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little impeded in their social progress by the forty-four years' residence of the Malabars at Anarajapoora. Although the petty kings of Rohuna and Maya submitted to pay tribute to Elala, his personal rule did not extend south of the Mahawelli-ganga[1], and whilst the strangers in the north of the island were plundering the temples of Buddha, the feudal chiefs in the south and west were emulating the munificence of Tissa in the number of wiharas which they constructed. B.C. 161.

Eager to conciliate his subjects by a similar display of regard for religion, Dutugaimunu signalised his victory and restoration by commencing the erection of the Ruanwellé dagoba, the most stupendous as well as the most venerated of those at Anarajapoora, as it enclosed a more imposing assemblage of relics than were ever enshrined in any other in Ceylon.

The mass of the population were liable to render compulsory labour to the crown; but wisely reflecting that it was not only derogatory to the sacredness of the object, but impolitic to exact any avoidable sacrifices from a people so recently suffering from internal warfare, Dutugaimunu came to the resolution of employing hired workmen only, and according to the *Mahawanso* vast numbers of the Yakkhos became converts to Buddhism during the progress of the building[2], which the king did not live to complete.

But the most remarkable of the edifices which he erected at the capital was the Maha-Lowa-Paya, a monastery which obtained the name of the *Brazen Palace* from the fact of its being roofed with plates of that metal. It was elevated on sixteen hundred monolithic

[1] *Mahawanso*, ch. xxii., *Rajavali*, p. 188, *Rajaratnacari*, p. 36. The *Mahawanso* has a story of Dutugaimunu, when a boy, illustrative of his early impatience to rid the island of the Malabars. His father seeing him, lying on his bed, with his hands and feet gathered up, inquired, "My boy, why not stretch thyself at length on thy bed?" "Confined by the Damilos," he replied, "beyond the river on the one side, and by the unyielding ocean on the other, how can I lie with outstretched limbs?"

[2] *Mahawanso*, ch. xxviii. xxix. xxx. xxxi.

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B.C. 161. columns of granite twelve feet high and arranged in lines of forty so as to cover an area of upwards of two hundred and twenty feet square. On these rested the building nine stories in height, which, in addition to a thousand dormitories for priests, contained halls and other apartments for their exercise and accommodation.

The *Mahawanso* relates with peculiar unction the munificence of Dutugaimunu in remunerating those employed upon this edifice; he deposited clothing for that purpose as well "as vessels filled with sugar, buffalo butter and honey;" he announced that on this occasion it was not fitting to exact unpaid labour, and, "placing high value on the work to be performed, he paid the workmen with money."[1]

The structure, when completed, far exceeded in splendour anything recorded in the sacred books. All its apartments were embellished with "beads, resplendent like gems;" the great hall was supported by golden pillars resting on lions and other animals, and the walls were ornamented with festoons of pearls and of flowers formed of jewels; in the centre was an ivory throne, with an emblem on one side of a golden sun, and on the other of the moon in silver, and above all glittered the imperial "chatta," the white canopy of dominion. The palace, says the *Mahawanso*, was provided with rich carpets and couches, and "even the ladle of the rice boiler was of gold."

The vicissitudes and transformations of the Brazen Palace are subjects of frequent mention in the history of the sacred city. As originally planned by Dutugaimunu, it did not endure through the reign of his successor Saidaitissa, at whose expense it was reconstructed, B.C. 140, but the number of stories was lowered to seven.[2] More than two centuries later, A.D. 182, these were again reduced to five[3], and the entire

[1] *Mahawanso*, ch. xxvii. p. 163.
[2] *Mahawanso*, ch. xxxvi.
[3] *Mahawanso*, ch. xxxiii.

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building must have been taken down in A.D. 240, as the king who was then reigning caused "the pillars of the Lowa Pasado to be arranged in a different form." B.C. 161.

The edifice erected on its site was pulled to the ground by the apostate Maha Sen, A.D. 301 [1]; but penitently reconstructed by him on his recantation of his errors. Its last recorded restoration took place in the reign of Prakrama-bahu, towards the close of the twelfth century, when "the king rebuilt the Lowa-Maha-paya, and raised up the 1600 pillars of rock."

Thus exposed to spoliation by its splendour, and obnoxious to infidel invaders from the religious uses to which it was dedicated, it was subjected to violence on every commotion, whether civil or external, which disturbed the repose of the capital; and at the present day, no traces of it remain except the indestructible monoliths on which it stood. A "world of stone

RUINS OF THE "BRAZEN PALACE.

columns," to use the quaint expression of Knox, still marks the site of the Brazen Palace of Dutugaimunu,

[1] *Mahawanso*, ch. xxxvii.

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B.C. 161. and attests the accuracy of the chronicles which describe its former magnificence.

The character of Dutugaimunu is succinctly expressed in his dying avowal, that he had lived "a slave to the priesthood."[1] Before partaking of food, it was his practice to present a portion for their use; and recollecting in maturer age, that on one occasion when a child, he had so far forgotten this invariable rule, as *to eat a chilly* without sharing it with the priest, he submitted himself to a penance in expiation of this youthful impiety.[2] His death scene, as described in the *Mahawanso*, contains an enumeration of the deeds of piety by which his reign had been signalised.[3] Extended on his couch in front of the great dagoba which he had erected, he thus addressed one of his military companions who had embraced the priesthood: "In times past, supported by my ten warriors, I engaged in battles; now, single-handed, I commence my last conflict, with death; and it is not permitted to me to overcome my antagonist." "Ruler of men," replied the thero, "without subduing the dominion of sin, the power of death is invincible; but call to recollection thy acts of piety performed, and from these you will derive consolation." The secretary then "read from the register of deeds of piety," that "one hundred wiharas, less one, had been constructed by the Maharaja, that he had built two great dagobas and the Brazen Palace at Anarajapoora; that in famines he had given his jewels to support the pious; that on three several occasions he had clothed the whole priesthood throughout the island, giving three garments to each; that five times he had conferred the sovereignty of the land for the space of seven days on the National Church; that he had founded hospitals for the infirm, and distributed rice to the indigent; bestowed lamps on innumerable temples,

B.C. 137.

[1] *Mahawanso*, ch. xxxii.
[2] *Mahawanso*, ch. xxiv. xxv.
[3] *Mahawanso*, ch. xxxii.

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and maintained preachers, in the various wiharas, in all B.C.
parts of his dominions. 'All these acts,' said the dying 137.
king, 'done in my days of prosperity, afford no comfort to my mind; but two offerings which I made when in affliction and in adversity, disregardful of my own fate, are those which alone administer solace to me now.'[1] After this, the pre-eminently wise Maharaja expired, stretched on his bed, in the act of gazing on the Mahatupo."[2]

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[1] *Mahawanso*, ch. xxxii.
[2] Another name for the Ruanwellé dagoba, which he had built.

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CHAP. VI.

THE INFLUENCE OF BUDDHISM ON CIVILISATION.

B.C. 137. AFTER the reign of Dutugaimunu there is little in the pages of the native historians to sustain interest in the story of the Singhalese monarchs. The long line of sovereigns is divided into two distinct classes; the kings of the *Maha-wanse* or "superior dynasty" of the uncontaminated blood of Wijayo, who occupied the throne from his death, B.C. 505, to that of Maha Sen, A.D. 302;—and the *Sulu-wanse* or "inferior race," whose descent was less pure, but who, amidst invasions, revolutions, and decline, continued, with unsteady hand, to hold the government down to the occupation of the island by Europeans in the beginning of the sixteenth century.

To the great dynasty, and more especially to its earliest members, the inhabitants were indebted for the first rudiments of civilisation, for the arts of agricultural life, for an organised government, and for a system of national worship. But neither the piety of the kings nor their munificence sufficed to conciliate the personal attachment of their subjects, or to strengthen their throne by national attachment such as would have fortified its occupant against the fatalities incident to despotism. Of fifty-one sovereigns who formed the pure Wijayan dynasty, two were deposed by their subjects, and nineteen put to death by their successors.[1] Excepting the

[1] There is something very striking in the facility with which aspirants to the throne obtained the instant acquiescence of the people, so soon as assassination had put them in possession of power. And this is the more remarkable, where the usurpers were of the lower grade, as in the instance of Subho, a gate porter, who murdered King Yasa Silo, A.D. 60,

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rare instances in which a reign was marked by some occurrence, such as an invasion and repulse of the Malabars, there is hardly a sovereign of the "Solar race" whose name is associated with a higher achievement than the erection of a dagoba or the formation of a tank, nor one whose story is enlivened by an event more exciting than the murder through which he mounted the throne or the conspiracy by which he was driven from it.[1]

B.C. 137.

One source of royal contention arose on the death of Dutugaimunu; his son, having forfeited his birthright by an alliance with a wife of lower caste, was set aside from the succession; Saidaitissa, a brother of the deceased king, being raised to the throne in his stead. The priests, on the death of Saidaitissa B.C. 119, hastened to proclaim his youngest son Thullatthanako[2], to the prejudice of his elder brother Laiminitissa, but the latter established his just claim by the sword, and hence

and reigned for six years (*Mahaw.* ch. xxxv. p. 218). A carpenter, and a carrier of fire-wood, were each accepted in succession as sovereigns, A.D. 47; whilst the *"great dynasty"* was still in the plenitude of its popularity. The mystery is perhaps referable to the dominant necessity of securing tranquillity at any cost, in the state of society where the means of cultivation were directly dependent on the village organisation, and famine and desolation would have been the instant and inevitable consequences of any commotions which interfered with the conservancy and repair of the tanks and means of irrigation, and the prompt application of labour to the raising and saving of produce at the instant when the fall of the rains or the ripening of the crops demanded its employment with the utmost vigour.

[1] In theory the Singhalese monarchy was elective in the descendants of the Solar race: in practice, primogeniture had a preference, and the crown was either hereditary or became the prize of those who claimed to be of royal lineage. On reviewing the succession of kings from B.C. 307 to A.D. 1815, *thirty-nine* eldest sons (or nearly one-fourth), succeeded to their fathers: and *twenty-nine* kings (or more than one-fifth), were succeeded by brothers. *Fifteen* reigned for a period less than one year, and thirty for more than one year, and less than four. Of the Singhalese kings who died by violence, twenty-two were murdered by their successors; six were killed by other individuals; thirteen fell in feuds and war, and four committed suicide; eleven were dethroned, and their subsequent fate is unknown. Not more than two-thirds of the Singhalese kings retained sovereign authority to their decease, or reached the funeral pile without a violent death.—FORBES' *Eleven Years in Ceylon*, vol. i. ch. iv. p. 80, 97; JOINVILLE, *Religion and Manners of the People of Ceylon; Asiat. Res.* vol. vii. p. 423. See also *Mahawanso*, ch. xxiii. p. 201.

[2] *Mahawanso*, ch. xxxiii. p. 201.

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B.C. 119. arose two rival lines, which for centuries afterwards were prompt on every opportunity to advance adverse pretensions to the throne, and assert them by force of arms.

In such contests the priesthood brought a preponderant influence to whatever side they inclined [1]; and thus the royal authority, though not strictly sacerdotal, became so closely identified with the hierarchy, and so guided by its will, that each sovereign's attention was chiefly devoted to forwarding such measures as most conduced to the exaltation of Buddhism and the maintenance of its monasteries and temples.

A signal effect of this regal policy, and of the growing diffusion of Buddhism, is to be traced in the impulse which it communicated to the reclamation of lands and the extension of cultivation. For more than three hundred years no mention is made in the Singhalese annals of any mode of maintaining the priesthood other than the royal distribution of clothing and voluntary offerings of food. They resorted for the "royal alms" either to the residence of the authorities or to halls specially built for their accommodation [2], to which they were summoned by "the shout of refection;" [3] the ordinary priests receiving rice, "those endowed with the gift of preaching, clarified butter, sugar, and honey." [4] Hospitals and medicines for their use, and rest houses on their journeys, were also provided at the public charge.[5] These expedients were available so long as the numbers of the priesthood were limited; but such were the

[1] It was the dying boast of Dutugaimunu that he had lived "a slave to the priesthood." The expression was figurative in his case; but so abject did the subserviency of the kings become, and so rapid was its growth, that Bhatiya Tissa, who reigned A.D 8, rendered it literal, and "dedicated himself, his queen, and two sons, as well as his charger, and state elephant, as *slaves to the priesthood*." The *Mahawanso* intimates that the priests themselves protested against this debasement, ch. xxxiv. p. 214.

[2] *Mahawanso*, ch. xx. p. 123; xxii. p. 132, 135.

[3] *Mahawanso*, ch. xxviii. p. 167.

[4] *Mahawanso*, ch. xxxii. p. 196–7.

[5] *Mahawanso*, ch. xxxii. p. 196; xxxvii. p. 244; *Rajaratnacari*, p. 39, 41.

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multitudes who were tempted to withdraw from the world and its pursuits, in order to devote themselves to meditation and the diffusion of Buddhism, that the difficulty became practical of maintaining them by personal gifts, and the alternative suggested itself of setting apart lands for their support. This innovation was first resorted to during an interregnum. The Singhalese king Walagam Bahu, being expelled from his capital by a Malabar usurpation B. C. 104, was unable to continue the accustomed regal bounty to the priesthood; and dedicated certain lands while in exile in Rohuna, for the support of a fraternity "who had sheltered him there."[1] The precedent thus established, was speedily seized upon and extended; lands were everywhere set apart for the repair of the sacred edifices[2], and eventually, about the beginning of the Christian era, the priesthood acquired such an increase of influence as sufficed to convert their precarious eleemosynary dependency into a permanent territorial endowment; and the practice became universal of conveying estates in mortmain on the construction of a wihara or the dedication of a temple.[3]

B.C. 119.

B.C. 104.

The corporate character of the recipients served to neutralise the obligations by which they were severally bound; the vow of poverty, though compulsory on an individual priest, ceased to be binding on the community of which he was a member; and whilst, on his own behalf, he was constrained to abjure the possession of property, even to the extent of one superfluous cloth, the wihara to which he was attached, in addition to its ecclesiastical buildings, and its offerings in gems and gold, was held competent to become the proprietor of broad and fertile lands.[4] These were so bountifully

[1] *Mahawanso*, ch. xxxiii. p. 203. Previous to this date a king of Rohuna, during the usurpation of Elala, B.C. 205, had appropriated lands near Kalany, for the repairs of the dagoba. —*Rajaratnacari*, p. 37.

[2] In the reign of Batiya Tissa, B.C. 20. *Mahawanso*, ch. xxxiv. p. 212; *Rajaratnacari*, p. 51.

[3] *Mahawanso*, ch. xxxiv. p. 214.

[4] HARDY's *Eastern Monachism*, ch. viii. p. 68.

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B.C. 104. bestowed by royal piety, by private munificence, and by mortuary gifts, that ere many centuries had elapsed the temples of Ceylon absorbed a large proportion of the landed property of the kingdom, and their possessions were not only exempted from taxation, but accompanied by a right to the compulsory labour of the temple tenants.[1]

As the estates so made over to religious uses lay for the most part in waste districts, the quantity of land which was thus brought under cultivation necessarily involved large extensions of the means of irrigation. To supply these, reservoirs were formed on such a scale as to justify the term "consecrated lakes," by which they are described in the Singhalese annals.[2]

Where the circumstances of the ground permitted, their formation was effected by drawing an embankment across the embouchure of a valley so as to arrest and retain the waters by which it was traversed, and so vast were the dimensions of some of these gigantic tanks that many yet in existence still cover an area of from fifteen to twenty miles in circumference. The ruins of that at Kalaweva, to the north-west of Dambool, show that its original circuit could not have been less than forty miles, its retaining bund being upwards of twelve miles long. The spill-water of stone, which remains to the present time, is "perhaps one of the most stupendous monuments of misapplied human labour in the island."[3]

The number of these stupendous works, which were formed by the early sovereigns of Ceylon, almost exceeds credibility. Kings are named in the native annals,

1 The *Rajaratnacari* mentions an instance, A.D. 62, of eight thousand rice fields bestowed in one grant, and similar munificence is recorded in numerous instances prior to A.D. 204. —*Rajaratnacari*, p. 57, 59, 64, 74, 113. &c. *Mahawanso*, ch. xxxv. p. 223, 224; ch. xxxvi. p. 233.

2 *Rajaratnacari*, ch. ii. p. 37; *Rajavali*, p. 237.

3 TURNOUR, *Mahawanso*, p. 12. The tank of Kalaweva was formed by Dhatu Sena, A.D. 459.—*Mahawanso*, ch. xxxviii. p. 257.

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each of whom made from fifteen to thirty[1], together with canals and all the appurtenances for irrigation. Originally these vast undertakings were completed "for the benefit of the country," and "out of compassion for living creatures;"[2] but so early as the first century of the Christian era, the custom became prevalent of forming tanks with the pious intention of conferring the lands which they enriched on the church. Wide districts, rendered fertile by the interception of a river and the formation of suitable canals, were appropriated to the maintenance of the local priesthood[3]; a tank and the thousands of acres which it fertilised were sometimes assigned for the perpetual repairs of a dagoba[4], and the revenues of whole villages and their surrounding rice fields were devoted to the support of a single wihara.[5] B.C. 104.

So lavish were these endowments, that one king, who signalised his reign by such extravagances as laying a carpet seven miles in length, "in order that pilgrims might proceed with unsoiled feet all the way from the Kadambo river (the Malwatté oya) to the mountain Chetiyo (Mihintala), awarded a priest who had presented him with a draught of water during the construction of a wihara, "land within the circumference of half a yoyana (eight miles) for the maintenance of the temple."[6]

It was in this manner that the beautiful tank at Mineri, one of the most lovely of these artificial lakes, was enclosed by Maha Sen, A.D. 275; and, together with the 80,000 amonams of ground which it waters, was

[1] *Rajaratnacari*, p. 41, 45, 54, 55; King Saidaitissa B.C. 137, made "eighteen lakes" (*Rajavali*, p. 233). King Wasabha, who ascended the throne A.D. 62, "caused sixteen large lakes to be enclosed" (*Rajaratnacari*, p. 57). Detu Tissa, A.D. 253, excavated six, (*Rajavali*, p. 237, and King Maha Sen, A.D. 275, seventeen, *Mahawanso*, ch. xxxviii. p. 236.

[2] *Mahawanso*, ch. xxxvii. p. 242.

[3] *Mahawanso*, ch. xxxiv. p. 210; xxxv. p. 221; xxxviii. p. 237. *Rajaratnacari*, ch. ii. p. 57, 59, 64, 69, 74.

[4] *Mahawanso*, ch. xxxv. p. 215, 218, 223; ch. xxxvii. p. 234; *Rajaratnacari*, ch. ii. p. 51. TURNOUR'S *Epitome*, p. 21.

[5] *Mahawanso*, ch. xxxv. p. 218, 221; *Rajaratnacari*, ch. ii. p. 51; *Rajavali*, p. 241.

[6] *Mahawanso*, ch. xxxiv. p. 3.

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B.C. 104. conferred on the Jeytawana Wihara which the king had just erected at Anarajapoora.[1]

To identify the crown still more closely with the interests of agriculture, some of the kings superintended public works for irrigating the lands of the temples[2]; and one more enthusiastic than the rest toiled in the rice fields to enhance the merit of conferring their produce on the priesthood.[3]

These broad possessions, the church, under all vicissitudes and revolutions, has succeeded in retaining to the present day. Their territories, it is true, have been diminished in extent by national decay; the destruction of works for irrigation has converted into wilderness and jungle plains once teeming with fertility; and the mild policy of the British government, by abolishing *raja-kariya*[4], has emancipated the peasantry, who are no longer the serfs either of the temples or the chiefs. But in every district of the island the priests are in the enjoyment of the most fertile lands, over which the crown exercises no right of taxation; and such is the extent of their possessions that, although their precise limits have not been ascertained by the local government, they have been conjectured with probability to be equal to one-third of the cultivated land of the island.

One peculiarity in the Buddhist ceremonial served at all times to give a singular impulse to the progress of horticulture. Flowers and garlands are introduced in its religious rites to the utmost excess. The atmosphere of the wiharas and temples is rendered oppressive with the perfume of champac and jessamine, and the shrine of the deity, the pedestals of his image, and the steps leading to the temple are strewn thickly with blos-

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[1] *Rajaratnacari*, ch. ii. p. 69.

[2] TURNOUR'S *Epitome*, p. 33.

[3] *Mahawanso*, ch. xxxiv. The Buddhist kings of Burmah are still accustomed to boast, almost in the terms of the *Mahawanso*, of the distinction which they have earned, by the multitudes of tanks they have constructed or restored. See YULE'S *Narrative of the Mission to Ava in* 1855, p. 106.

[4] Compulsory labour.

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soms of the nagaha and the lotus. At an earlier period the profusion in which these beautiful emblems were employed in sacred decorations appears almost incredible; the *Mahawanso* relates that the Ruanwellé dagoba, which was 270 feet in height, was on one occasion "festooned with garlands from pedestal to pinnacle till it resembled one uniform bouquet;" and at another time, it and the lofty dagoba at Mihintala were buried under heaps of jessamine from the ground to the summit.[1] Fa Hian, in describing his visit to Anarajapoora in the fourth century, dwells with admiration and wonder on the perfumes and flowers lavished on their worship by the Singhalese[2]; and the native historians constantly allude as familiar incidents to the profusion in which they were employed on ordinary occasions, and to the formation by successive kings of innumerable gardens for the floral requirements of the temples. The capital was surrounded on all sides[3] by flower gardens, and these were multiplied so extensively that, according to the *Rajaratnacari*, one was to be found within a distance of four leagues in any part of Ceylon.[4] Amongst the regulations of the temple built at Dambedinia, in the thirteenth century, was "every day an offering of 100,000 flowers, and each day a different flower."[5]

B.C. 104.

Another advantage conferred by Buddhism on the country was the planting of fruit trees and vegetables for the gratuitous use of travellers in all the frequented parts of the island. The historical evidences of this are singularly corroborative of the genuineness of the

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[1] *Mahawanso*, ch. xxxiv.; *Rajaratnacari*, p. 52, 53.

[2] FA HIAN. *Foë Koué Ki*, ch. xxxviii. p. 335.

[3] *Rajavali*, p. 227; *Mahawanso*, ch. xi. p. 67.

[4] *Rajaratnacari*, p .29, 49. Amongst the officers attached to the great establishments of the priests in Mihintala, A.D. 246, there are enumerated in an inscription engraven on a rock there, a secretary, a treasurer, a physician, a surgeon, a painter, twelve cooks, twelve thatchers, ten carpenters, six carters, and *two florists*.

[5] *Rajaratnacari*, p. 103. The same book states that another king, in the fifteenth century, "offered no less than 6,480,320 sweet smelling flowers" at the shrine of the Tooth. —*Ib.*, p. 136.

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B.C. 104. Buddhist edicts engraved on various rocks and monuments in India, the deciphering of which was the grand achievement of Prinsep and his learned coadjutors. On the pillars of Delhi, Allahabad, and other places, and on the rocks of Girnar and Dhauli, there exist a number of Pali inscriptions purporting to be edicts of Asoca (the Dharmasoca of the *Mahawanso*), King of Magadha, in the third century before the Christian era, who, on his conversion to the religion of Buddha, commissioned Mahindo, his son, to undertake its establishment in Ceylon. In these edicts, which were promulgated in the vernacular dialect, the king endeavoured to impress both upon his subjects and allies, as well as those who, although aliens, were yet "united in the law" of Buddha, the divine precepts of their great teacher; prominent amongst which are the prohibition against taking animal life[1], and the injunction that, "everywhere wholesome vegetables, roots, and fruit trees shall be cultivated, and that on the roads wells shall be dug and trees planted for the enjoyment of men and animals." In apparent conformity with these edicts, one of the kings of Ceylon, Addagaimunu, A.D. 20, is stated in the *Mahawanso* to have "caused to be planted throughout the island every description of fruit-bearing creepers, and interdicted the destruction of animal life[2]," and similar acts of pious benevolence, performed by command of various other sovereigns, are adverted to on numerous occasions.

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[1] It is curious that one of these edicts of Asoca, who was cotemporary with Devenipiatissa, is addressed to "all the conquered territories of the raja, even unto the ends of the earth, as in Chola, in Pida, in Keralaputra, *and in Tambapanni* (or Ceylon)." This license of speech, reminding one of the grandiloquent epistles "from the Flaminian Gate," was no doubt assumed in virtue of the recent establishment of Buddhism, or, as it is called in the *Mahawanso*, "the religion of the Vanquisher," and Asoca, as its propagator, thus claims to address the converts as his "subjects."

[2] *Mahawanso*, ch. xxxv. p. 215. The king Upatissa, A.D. 368, in the midst of a solemn ceremonial, "observing ants and other insects drowning in an inundation, halted, and having swept them towards the bank with the feathers of a peacock's tail, and enabled them to save themselves, he continued the procession."—*Mahawanso*, ch. xxxvii. p. 249; *Rajaratnacari*, p. 49, 52; *Rajavali*, p. 228.

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CHAP. VII.

FATE OF THE ABORIGINES.

IT has already been shown, that devotion and policy combined to accelerate the progress of social improvement in Ceylon, and that before the close of the third century of the Christian era, the island to the north of the Kandyan mountains contained numerous cities and villages, adorned with temples and dagobas, and seated in the midst of highly cultivated fields. The face of the country exhibited broad expanses of rice land, irrigated by artificial lakes, and canals of proportionate magnitude, by which the waters from the rivers, which would otherwise have flowed idly to the sea, were diverted inland in all directions to fertilise the rice fields of the interior.[1] B.C. 104.

In the formation of these prodigious tanks, the labour chiefly employed was that of the aboriginal inhabitants, the Yakkhos and Nagas, directed by the science and skill of the conquerors. Their contributions of this kind, though in the instance of the Buddhist converts they may have been to some extent voluntary, were, in general, the result of compulsion.[2] Like the Israelites under the Egyptians, the aborigines were compelled to make bricks[3] for the stupendous dagobas erected by their masters[4]; and eight hundred years after the subjugation of the island, the *Rajavali* describes vast reservoirs and appliances for irrigation, as being constructed by the forced labour of the

[1] *Mahawanso*, ch. xxxv. xxxvii.

[2] In some instances the soldiers of the king were employed in forming works of irrigation.

[3] *Mahawanso*, ch. xxxviii.

[4] *Ibid.*, ch. xxvii.

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B.C. 104. Yakkhos[1], under the superintendence of Brahman engineers.[2] This, to some extent, accounts for the prodigious amount of labour bestowed on these structures; labour which the whole revenue of the kingdom would not have sufficed to purchase, had it not been otherwise procurable.

Under this system, the fate of the aborigines was that usually consequent on the subjugation of an inferior race by one more highly civilised. The process of their absorption into the dominant race was slow, and for centuries they continued to exist distinct, as a subjugated people. So firmly rooted amongst them was the worship both of demons and serpents, that, notwithstanding the ascendency of Buddhism, many centuries elapsed before it was ostensibly abandoned; from time to time, "demon offerings" were made from the royal treasury[3]; and one of the kings, in his enlarged liberality, ordered that for every ten villages there should be maintained an astrologer and a "devil-dancer," in addition to the doctor and the priest.[4]

Throughout the Singhalese chronicles, the notices of the aborigines are but casual, and occasionally contemptuous. Sometimes they allude to "slaves of the Yakkho tribe,"[5] and in recording the progress and completion of the tanks and other stupendous works, the *Mahawanso* and the *Rajaratnacari*, in order to indicate the inferiority of the natives to their masters, speak of their conjoint labours as that of "men and snakes,"[6] and "men and demons."[7]

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[1] *Rajavali*, p. 237, 238. Exceptions to the extortion of forced labour for public works took place under the more pious kings, who made a merit of paying the workmen employed in the erection of dagobas and other religious monuments.—*Mahawanso*, ch. xxxv.

[2] *Mahawanso*, ch. x.

[3] *Mahawanso*, ch. x.; Turnour's *Epitome*, p. 23.

[4] Turnour's *Epitome*, p. 27; *Rajaratnacari*, ch. ii.; *Rajavali*, p. 241.

[5] *Mahawanso*, ch. x.

[6] *Ibid.*, ch. xix. p. 115.

[7] The King Maha-Sen, anxious for the promotion of agriculture, caused many tanks to be made "by men and devils."—*Mahawanso*, ch. xxxvii.; Upham's *Transl.; Rajaratnacari*, p. 69; *Rajavali*, p. 237.

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Notwithstanding the degradation of the natives, it was indispensable to "befriend the interests" of a race so numerous and so useful; hence, they were frequently employed in the military expeditions of the Wijayan sovereigns[1], and the earlier kings of that dynasty admitted the rank of the Yakkho chiefs who shared in these enterprises. They assigned a suburb of the capital for their residence[2], and on festive occasions they were seated on thrones of equal eminence with that of the king.[3] But every aspiration towards a recovery of their independence was checked by a device less characteristic of ingenuity in the ascendant race, than of simplicity combined with jealousy in the aborigines. The feeling was encouraged and matured into a conviction which prevailed to the latest period of the Singhalese sovereignty, that no individual of pure Singhalese extraction could be elevated to the supreme power, since no one could prostrate himself before one of his own nation.[4]

B.C. 104.

For successive generations, however, the natives, although treated with partial kindness, were regarded as a separate race. Even the children of Wijayo, by his first wife Kuweni, united themselves with their maternal connexions on the repudiation of their mother by the king, "and retained the attributes of Yakkhos,"[5] and by that designation the natives continued to be distinguished down to the reign of Dutugaimunu.

In spite of every attempt at conciliation, the process of amalgamation between the two races was reluctant and slow. The earliest Bengal immigrants sought wives among the Tamils, on the opposite coast of India[6]; and although their descendants intermarried with the natives, the great mass of the population long held aloof from the invaders, and occasionally vented

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[1] *Mahawanso,* ch. x.
[2] *Ibid.,* ch. x. p. 67.
[3] *Ibid.,* p. 66.
[4] JOINVILLE's *Asiat. Res.* vol. vii. p. 422.
[5] *Mahawanso,* ch. vii.
[6] *Ibid.,* p. 53.

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B.C. 104. their impatience in rebellion.[1] Hence the progress of civilisation amongst them was but partial and slow, and in the narratives of the early rulers of the island there is ample evidence that the aborigines long retained their habits of shyness and timidity.

Notwithstanding the frequent resort of every nation of antiquity to its coasts, the accounts of the first voyagers are almost wholly confined to descriptions of the loveliness of the country, the singular brilliancy of its jewels, the richness of its pearls, the sagacity of its elephants, and the delicacy and abundance of its spices; but the information which they furnish regarding its inhabitants is so uniformly meagre, as to attest the absence of intercourse; and the writers of all nations, Romans, Greeks, Arabians, Chinese and Indians, concur in their allusions to the unsocial and uncivilised customs of the islanders.[2]

As the Bengal adventurers advanced into the interior of the island, a large section of the natives withdrew into the forests and hunting grounds on the eastern and southern coasts.[3] There, subsisting by the bow[4] and the chase, they adhered, with moody tenacity, to the rude habits of their race; and in the Veddah of the present day, there is still to be recognised a remnant of the untamed aborigines of Ceylon.[5]

Even those of the original race who slowly conformed to the religion and habits of their masters, were never entirely emancipated from the ascendency of their ancient superstitions. Traces of the worship of snakes and demons are to the present hour clearly perceptible amongst them; the Buddhists still resort to the incan-

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[1] *Mahawanso*, ch. lxxxv.

[2] See an account of these singular peculiarities, Vol. I. P. IV. c. vii.

[3] *Hiouen Thsang*, the Chinese geographer, who visited India in the seventh century, says that at that time the Yakkhos had retired to the south-east corner of Ceylon; — and here their descendants, the Veddahs, are found at the present day. — *Voyages, &c.*, liv. iv. p. 200.

[4] *Mahawanso*, ch. xxiv. p. 145, xxxiii. p. 204.

[5] DE ALWIS, *Sidath Sangara*, p. xvii. For an account of the Veddahs and their present condition, see Vol. II. P. IX. ch. iii.

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tations of the "devil dancers" in case of danger and emergency[1]; a Singhalese, rather than put a Cobra de Capello to death, encloses the reptile in a wicker cage, and sets it adrift on the nearest stream; and in the island of Nainativoe, to the south-west of Jaffa, there was till recently a little temple, dedicated to the goddess Naga Tambiran, in which consecrated serpents were tenderly reared by the Pandarams, and daily fed at the expense of the worshippers.[2] B.C. 104.

[1] For an account of Demon worship as it still exists in Ceylon, see Sir J. EMERSON TENNENT'S *History of Christianity in Ceylon*, ch. v. p. 230.

[2] CASIE CHITTY'S *Gazetteer*, &c., p. 169.

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CHAP. VIII.

EXTINCTION OF THE "GREAT DYNASTY."

B.C. 104. FROM the death of Dutugaimunu to the exhaustion of the superior dynasty on the death of Maha-Sen, A.D. 301, there are few demonstrations of pious munificence to signalise the policy of the intervening sovereigns. The king whom, next to Devenipiatissa and Dutugaimunu, the Buddhist historians rejoice to exalt as one of the champions of the faith, was Walagam-bahu I.[1], whose reign, though marked by vicissitudes, was productive of lasting benefit to the national faith. Walagam-bahu ascended the throne B.C. 104. but was almost immediately forced to abdicate by an incursion of the Malabars; who, concerting a simultaneous landing at several parts of the island, combined their movements so successfully that they seized on Anarajapoora, and drove the king into concealment in the mountains near Adam's Peak; and whilst one portion of the invaders returned laden with plunder to the Dekkan, their companions remained behind and held undisputed possession of the northern parts of Ceylon for nearly fifteen years.

In this and the frequent incursions which followed, the Malabar leaders were attracted by the wealth of the country to the north of the Mahawelli-ganga, the southern portion of the island being either too wild and unproductive to present a temptation to conquest, or too steep and inaccessible to afford facilities for invasion. Besides, the highlanders who inhabit the lofty ranges that lie around Adam's Peak; (a district known

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[1] Called in the *Mahawanso*, "Wata-gamini."

as Malaya, "the region of mountains and torrents,")[1] B.C. 104.
then and at all times exhibited their superiority over the lowlanders in vigour, courage, and endurance. Hence the petty kingdoms of Maya and Rohuna afforded on every occasion a refuge to the royal family when driven from the northern capital, and furnished a force to assist in their return and restoration. Walagam-bahu, after many years' concealment there, was at last enabled to resume the offensive, and succeeded in driving out the infidels, and recovering possession of the sacred city, an event which he commemorated in the usual manner by the erection of dagobas, tanks, and wiharas.

THE ALOO-WIHARA, NEAR MATELLE.

But the achievement by which most of all he entitled himself to the gratitude of the Singhalese annalists, was the reduction to writing of the doctrines and discourses of Buddha, which had been orally delivered by Mahindo, and previously preserved by tradition alone. These sacred volumes, which may be termed the Buddhist

[1] *Mahawanso*, ch. vii.

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B.C. 89. Scriptures, contain the Pittakataya, and its commentaries the Atthakatha, and were compiled by a company of priests in a cave to the north of Matelle, known as the Aloo-wihara.[1] This, and other caverns in which the king had sought concealment during his adversity, he caused to be converted into rock temples after his restoration to power. Amongst the rest, Dambool, which is the most remarkable of the cave temples of Ceylon from its vastness, its elaborate ornaments, and the romantic beauty of its situation and the scenery surrounding it.

B.C. 62. The history of the Buddhist religion in Ceylon is not, however, a tale of uniform prosperity. The first of its domestic enemies was Naga, the grandson of the pious Walagam-bahu, whom the native historians stigmatise by the prefix of "chora" or the "marauder." His story is thus briefly but emphatically told in the *Mahawanso:* "During the reign of his father Mahachula, Chora Naga wandered through the island leading the life of a robber; returning on the demise of the king he assumed the monarchy; and in the places which had denied him an asylum during his
B.C. 50. marauding career, he impiously destroyed the wiharas.[2] After a reign of twelve years he was poisoned by his queen Anula, and regenerated in the Lokantariko hell."[3]

B.C. 47. His son, King Kuda Tissa, was also poisoned by his mother, in order to clear her own way to the throne. The Singhalese annals thus exhibit the unusual incident of a queen enrolled amongst the monarchs of the *great dynasty*—a precedent which was followed in after times;

[1] *Rajaratnacari*, ch. i. p. 43. Abouzeyd states that at that time public writers were employed in recording the traditions of the island: "Le Royaume de Serendyb a une loi et des docteurs qui s'assemblent de temps en temps comme se réunissent chez nous les personnes qui recueillent les traditions du prophète, et les Indiens se rendent auprès des docteurs, et écrivent sous leurs dictée, la vie de leurs prophètes et les préceptes de leur loi."—REINAUD, *Rélation*, &c., tom. i. p. 127.

[2] *Mahawanso*, ch. xxxiii.; *Rajavali*, p. 224; TURNOUR's *Epitome*, p. 19; *Rajaratnacari*, ch. i. p. 43, 44.

[3] *Mahawanso*, ch. xxxiv. p. 209.

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Queen Siwalli having reigned in the succeeding century, A.D. 37, Queen Lila-wati, in A.D. 1197, and Queen Kalyana-wati in A.D. 1202. From the excessive vileness of her character, the first of these Singhalese women who attained to the honours of sovereignty is denounced in the *Mahawanso* as "the infamous Anula." In the enormity of her crimes and debauchery she was the Messalina of Ceylon;—she raised to the throne a porter of the palace with whom she cohabited, descending herself to the subordinate rank of Queen Consort, and poisoned him to promote a carpenter in his stead. A carrier of firewood, a Brahman, and numerous other paramours followed in rapid succession, and shared a similar fate, till the kingdom was at last relieved from the opprobrium by a son of Prince Tissa, who put the murderess to death, and restored the royal line in his own person. His successors for more than two centuries were a race of pious *fainéants*, undistinguished by any qualities, and remembered only by their fanatical subserviency to the priesthood.

B.C. 47.

B.C. 41.

Buddhism, relieved from the fury of impiety, was next imperilled by the danger of schism. Even before the funeral obsequies of Buddha, schism had displayed itself in Maghadha, and two centuries had not elapsed from his death till it had manifested itself on no less than seventeen occasions, and in each instance it was with difficulty checked by councils in which the priesthood settled the faith in relation to the points which gave rise to dispute; but not before the actual occurrence of secessions from the orthodox church.[1] The earliest differences were on questions of discipline amongst the colleges and fraternities at Anarajapoora; but in the reign of Wairatissa, A.D. 209, a formidable controversy arose, impugning the doctrines of Buddhism, and threatening for a time to rend in sunder the sacred unity of the church.[2]

A.D. 209.

[1] *Mahawanso*, ch. v. p. 21. [2] *Ibid.*, ch. xxxiii.

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A.D. 209. Buddhism, although tolerant of heresy, has ever been vehement in its persecution of schism. Boldly confident in its own superiority, it bears without impatience the glaring errors of open antagonists, and seems to exult in the contiguity of competing systems as if deriving strength by comparison. In this respect it exhibits a similarity to the religion of Brahma, which regards with composure shades of doctrinal difference, and only rises into jealous energy in support of the distinctions of caste, an infringement of which might endanger the supremacy of the priesthood.[1] To the assaults of open opponents the Buddhist displays the calmest indifference, convinced that in its undiminished strength, his faith is firm and inexpugnable; his vigilance is only excited by the alarm of internal dissent, and all his passions are aroused to stifle the symptoms of schism.[2]

This characteristic of the "religion of the Vanquisher" is in strict conformity, not alone with the spirit of his

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[1] Hence the indomitable hatred with which the Brahmans pursued the disciples of Buddhism from the fourth century before Christ to its final expulsion from Hindustan. "Abundant proofs," says Turnour, "may be adduced to show the fanatical ferocity with which these two great sects persecuted each other; and which subsided into passive hatred and contempt, only when the parties were no longer placed in the position of actual collision."—Introd. *Mahawanso*, p. xxii.

[2] In its earliest form Buddhism was equally averse to persecution, and the *Mahawanso* extols the liberality of Asoca in giving alms indiscriminately to the members of all religions (*Mahawanso*, ch. v. p. 23). A sect which is addicted to persecution is not likely to speak approvingly of toleration, but the *Mahawanso* records with evident satisfaction the courtesy paid to the sacred things of Buddhism by the believers in other doctrines; thus the Nagas did homage to the relics of Buddha and mourned their removal from Mount Meru (*Mahawanso*, ch. xxxi. p. 189); the Yakkhos assisted at the building of dagobas to enshrine them, and the Brahmans were the first to respect the Bo-tree on its arrival in Ceylon (*Ib.* ch. xix. p. 119). COSMAS INDICOPLEUSTES, whose informant, Sopater, visited Ceylon in the sixth century, records that there was then the most extended toleration, and that even the Nestorian Christians had perfect freedom and protection for their worship.

Among the Buddhists of Burmah, however, "although they are tolerant of the practice of other religions by those who profess them, secession from the national faith is rigidly prohibited, and a convert to any other form of faith incurs the penalty of death."—Professor WILSON, *Journ. Roy. Asiat. Soc.* vol. xvi. p. 261.

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doctrine, but also with the letter of the law laid down for the guidance of his disciples. Two of the singular rock-inscriptions of India deciphered by Prinsep, inculcate the duty of leaving the profession of different faiths unmolested; on the ground, that "all aim at moral restraint and purity of life, although all cannot be equally successful in attaining to it." The sentiments embodied in one of the edicts[1] of King Asoca are very striking: "A man must honour his own faith, without blaming that of his neighbour, and thus will but little that is wrong occur. There are even circumstances under which the faith of others should be honoured, and in acting thus a man increases his own faith and weakens that of others. He who acts differently, diminishes his own faith and injures that of another. Whoever he may be who honours his own faith and blames that of others out of devotion to his own, and says, 'let us make our faith conspicuous,' that man merely injures the faith he holds. Concord alone is to be desired." A.D. 209.

The obligation to maintain the religion of Buddha was as binding as the command to abstain from assailing that of its rivals, and hence the kings who had treated the snake-worshippers with kindness, who had made a state provision for maintaining "offerings to demons," and built dwellings at the capital to accommodate the "ministers of foreign religions," rose in fierce indignation against the preaching of a firm believer in Buddha, who ventured to put an independent interpretation on points of faith. They burned the books of the Wytulians, as the new sect were called, and frustrated their irreligious attempt.[2] The first

[1] The twelfth tablet, which, as translated by BURNOUF and Professor WILSON, will be found in Mrs. SPEIR's *Life in Ancient India*, book ii. ch. iv. p. 239.

[2] The *Mahawanso* throws no light on the nature of the Wytulian (or Wettulyan) heresy (ch. xxvii. p. 227), but the *Rajaratnacari* insinuates that Wytulia was a Brahman who had "subverted by craft and intrigue the religion of Buddha" (ch. ii. p. 61). As it is stated in a further passage that the priests who were implicated were stripped of their habits, it is evident that the innovation had been introduced under the garb of Buddha.—*Rajaratnacari*, ch. ii. p. 65.

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A.D. 209. effort at repression was ineffectual. It was made by the King Wairatissa, A.D. 209; but within forty years the schismatic tendency returned, the persecution was renewed, and the apostate priests, after being branded on the back, were ignominiously transported to the opposite coast of India.[1] A.D. 248.

The new sect had, however, established an interest in high places; and Sangha-mitta, one of the exiled priests, returning from banishment on the death of the king, so ingratiated himself with his successor, that he was entrusted with the education of the king's sons. One of the latter, Maha Sen, succeeded to the throne, A.D. 275, and, openly professing his adoption of the Wytulian tenets, dispossessed the popular priesthood, and overthrew the Brazen Palace. With the materials of the great wihara, he constructed at the sacred Bo-tree a building as a receptacle for relics, and a temple in which the statue of Buddha was to be worshipped according to the rites of the reformed religion.[2] A.D. 275.

So bold an innovation roused the passions of the nation; the people prepared for revolt, and a conflict was imminent, when the schismatic Sangha-mitta was suddenly assassinated, and the king, convinced of his

[1] TURNOUR's *Epitome*, p. 25. *Mahawanso*, ch. xxxvi. p. 232. As the *Mahawanso* intimates in another passage that amongst the priests who were banished to the opposite coast of India, there was one Sangha-mitta, "who was profoundly versed in the rites of the demon faith ('bhuta'), it is probable that out of the Wytulian heresy grew the system which prevails to the present day, by which the heterodox *dewales* and halls for devil dances are built in close contiguity to the temples and wiharas of the orthodox Buddhists, and the barbarous rites of demon worship are incorporated with the abstractions of the national religion. On the restoration of Maha-Sen to the true faith, the *Mahawanso* represents him as destroying the *dewales* at Anarajapoora in order to replace them with wiharas (*Mahawanso*, ch. xxxvii. p. 237). An account of the mingling of Brahmanical with Buddhist worship, as it exists at the present day, will be found in HARDY's *Oriental Monachism*, ch. xix. Professor H. H. WILSON, in his *Historical Sketch of the Kingdom of Pandya*, alludes to a heresy, which, anterior to the sixth century, disturbed the *sangattar* or college of Madura; the leading feature of which was the admixture of Buddhist doctrines with the rite of the Brahmans, and "this heresy," he says, "some traditions assert was introduced from Ceylon."—*Asiat. Journ.* vol. iii. p. 218.

[2] *Mahawanso*, ch. xxxvii. p. 235.

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errors, addressed himself with energy to restore the buildings he had destroyed, and to redress the mischiefs caused by his apostacy. He demolished the dewales of the Hindus, in order to use their sites for Buddhist wiharas; he erected nunneries, constructed the Jaytawanarama (a dagoba at Anarajapoora), formed the great tank of Mineri by drawing a dam across the Kara-ganga, and that of Kandelay or Dantalawa, and conservated the 20,000 fields which it irrigated to the Dennanaka Wihare.[1] "He repaired numerous dilapidated temples throughout the island, made offerings of a thousand robes to a thousand priests, formed sixteen tanks to extend cultivation — there is no defining the extent of his charity" — and having performed during his existence acts both of piety and impiety, the *Mahawanso* cautiously adds, "his destiny after death was according to his merits.[2]

A.D. 275.

With King Maha Sen end the glories of the "superior dynasty" of Ceylon. The "sovereigns of the *Suluwanse*, who followed," says the *Rajavali*, "were no longer of the unmixed blood, but the offspring of parents, only one of whom was descended from the sun, and the other from the bringer of the Bo-tree or the sacred tooth; on that account, because the God Sakkraia had ceased to watch over Ceylon, because piety had disappeared, and the city of Anarajapoora was in ruins, and because the fertility of the land was diminished, the kings who succeeded Maha Sen were no longer reverenced as of old."[3]

A.D. 302.

The prosperity of Ceylon, though it may not have attained its acme, was sound and auspicious in the beginning of the fourth century, when the solar line became extinct. Pihiti, the northern portion of the island, was that which most engaged the solicitude of the crown, from its containing the ancient capital,

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[1] TURNOUR's *Epitome*, p. 25.
[2] *Mahawanso*, ch. xxxiii. p. 238.
[3] *Rajavali*, p. 239.

A.D. 302. whence it obtained its designation of the Raja-ratta or country of the kings. Here the labour bestowed on irrigation had made the food of the population abundant, and the sums expended on the adornment of the city, the multitude of its sacred structures, the splendour of its buildings, and the beauty of its lakes and gardens, rendered it no inappropriate representative of the wealth and fertility of the kingdom.

Anarajapoora had from time immemorial been a venerated locality in the eyes of the Buddhists; it had been honoured by the visit of Buddha in person, and it was already a place of importance when Wijayo effected his landing in the fifth century before the Christian era. It became the capital a century after, and the King Pandukabhaya, who formed the ornamental lake which adjoined it, and planted gardens and parks for public festivities, built gates and four suburbs to the city; set apart ground for a public cemetery, and erected a gilded hall of audience, and a palace for his own residence.

The *Mahawanso* describes with particularity the offices of the Naggaraguttiko, who was the chief of the city guard, and the organisation of the low caste Chandalas, who were entrusted with the cleansing of the capital and the removal of the dead for interment. For these and for the royal huntsmen villages were constructed in the environs, mingled with which were dwellings for the subjugated native tribes, and temples for the worship of foreign devotees.[1]

Seventy years later, when Mahindo arrived in Ceylon, the details of his reception disclose the increased magnificence of the capital, the richness of the royal parks, and the extent of the state establishments; and describe the chariots in which the king drove to Mihintala to welcome his exalted guest.[2]

Yet these were but preliminary to the grander con-

[1] *Mahawanso,* ch. x. p. 66. [2] *Ibid.,* ch. xiv. xv. xx.

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structions which gave the city its lasting renown; stupendous dagobas raised by successive monarchs, each eager to surpass the conceptions of his predecessors; temples in which were deposited statues of gold adorned with gems and native pearls; the decorated terraces of the Bo-tree, and the Brazen Palace, with its thousand chambers and its richly embellished halls. The city was enclosed by a rampart upwards of twenty feet in height[1], which was afterwards replaced by a wall[2]; and, so late as the fourth century, the Chinese traveller Fa Hian describes the condition of the place in terms which fully corroborate the accounts of the

A.D. 302.

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[1] By WASABHO, A.D. 66. *Mahawanso*, ch. xxxv. p. 222.

[2] TURNOUR, in his *Epitome of the History of Ceylon*, says that Anarajapoora was enclosed by a rampart seven cubits high, B.C. 41, and that A.D. 66 King Wasabha built a wall round the city sixteen gows in circumference. As he estimates the gow at four English miles, this would give an area equal to about 300 square miles. A space so prodigious for the capital seems to be disproportionate to the extent of the kingdom, and far too extended for the wants of the population. TURNOUR does not furnish the authority on which he gives the dimensions, nor have I been able to discover it in the *Rajavali* nor in the *Rajaratnacari*. The *Mahawanso* alludes to the fact of Anarajapoora having been fortified by Wasabha, but, instead of a wall, the work which it describes this king to have undertaken, was the raising of the height of the rampart from seven cubits to eighteen (*Mahawanso*, ch. xxxv. p. 222). Major Forbes, in his account of the ruins of the ancient city, repeats the story of their former extent, in which he no doubt considered that the high authority of Turnour in matters of antiquity was sustained by a statement made by Lieutenant Skinner, who had surveyed the ruins in 1822, to the effect that he had discovered near Alia-parte the remains of masonry, which he concluded to be a portion of the ancient city wall running north and south and forming the west face; and, as Alia-parte is seven miles from Anarajapoora, he regarded this discovery as confirming the account given of its original dimensions. Lieutenant, now Major, Skinner has recently informed me that, on mature reflection, he has reason to fear that his first inference was precipitate. In a letter of the 8th of May, 1856, he says:—"It was in 1833 I first visited Anarajapoora, when I made my survey of its ruins. The supposed foundation of the western face of the city wall was pointed out near the village of Alia-parte by the people, and I hastily adopted it. I had not at the time leisure to follow up this search and determine how far it extended, but from subsequent visits to the place I have been led to doubt the accuracy of this tradition, though on most other points I found the natives tolerably accurate in their knowledge of the history of the ancient capital. I have since sought for traces of the other faces of the supposed wall, at the distances from the centre of the city at which it was said to have existed, but without success." The ruins which Major Skinner saw at Alia-parte are most probably those of one of the numerous forts which the Singhalese kings erected at a much later period, to keep the Malabars in check.

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A.D. 302. *Mahawanso.* It was crowded, he says, with nobles, magistrates, and foreign merchants; the houses were handsome, and the public buildings richly adorned. The streets and highways were broad and level, and halls for preaching and reading *bana* were erected in all the thoroughfares. He was assured that the island contained not less than from fifty to sixty thousand ecclesiastics, who all ate in common; and of whom from five to six thousand were supported by the bounty of the king.

The sacred tooth of Buddha was publicly exposed on sacred days in the capital with gorgeous ceremonies, which he recounts, and thence carried in procession to "the mountains without fear;" the road to which was perfumed and decked with flowers for the occasion; and the festival was concluded by a dramatic representation of events in the life of Buddha, illustrated by scenery and costumes, with figures of elephants and stags, so delicately coloured as to be undistinguishable from nature.[1]

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[1] FA HIAN, *Foë Kouë Ki,* ch. xxxviii. p. 334, &c.

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CHAP. IX.

KINGS OF THE "LOWER DYNASTY."

THE story of the kings of Ceylon of the *Sulu-wanse* or "lower line," is but a narrative of the decline of the power and prosperity which had been matured under the Bengal conquerors and of the rise of the Malabar marauders, whose ceaseless forays and incursions eventually reduced authority to feebleness and the island to desolation. The vapid biography of the royal imbeciles who filled the throne from the third to the thirteenth century scarcely embodies an incident of sufficient interest to diversify the monotonous repetition of temples founded and dagobas repaired, of tanks constructed and priests endowed with lands reclaimed and fertilised by the "forced labour" of the subjugated races. Civil dissensions, religious schisms, royal intrigues and assassinations contributed equally with foreign invasions to diminish the influence of the monarchy and exhaust the strength of the kingdom.

A.D. 302.

Of sixty-two sovereigns who reigned from the death of Maha-Sen, A.D. 301, to the accession of Prakrama Bahu, A.D. 1153, nine met a violent death at the hands of their relatives or subjects, two ended their days in exile, one was slain by the Malabars, and four committed suicide. Of the lives of the larger number the Buddhist historians fail to furnish any important incidents; they relate merely the merit which each acquired by his liberality to the national religion or the more substantial benefits conferred on the people by the formation of lakes for irrigation.

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A.D. 330. Unembarrassed by any questions of external policy or foreign expeditions, and limited to a narrow range of internal administration, a few of the early kings addressed themselves to intellectual pursuits. One immortalised himself in the estimation of the devout by his skill in painting and sculpture, and in carving in ivory, arts which he displayed by modelling statues of Buddha, and which he employed himself in teaching to his subjects.[1] A.D. 339. Another was equally renowned as a medical author and a practitioner of surgery[2], and a third was so passionately attached to poetry that in despair for the death of Kalidas[3], he flung himself into the flames of the poet's funeral pile.

With the exception of the embassy sent from Ceylon to Rome in the reign of the Emperor Claudius[4], the earliest diplomatic intercourse with foreigners of which a record exists, occurred in the fourth or fifth centuries, when the Singhalese appear to have sent ambassadors to the Emperor Julian[5], and for the first time to have established a friendly connection with China. It is strange, considering the religious sympathies which united the two people, that the native chronicles make no mention of the latter negotiations or their results, so that we learn of them only through Chinese historians. The *Encyclopædia* of MA-TOUAN-LIN, written at the close of the thirteenth century[6], records that Ceylon

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[1] Detoo Tissa, A.D. 330, *Mahawanso*, xxxvii. p. 242.

[2] Budha Daasa, A.D. 339. *Mahawanso*, xxxvii. p. 243. His work on medicine, entitled *Sara-sangraha* or *Sarat-tha-Sambo*, is still extant, and native practitioners profess to consult it.—TURNOUR's *Epitome*, p. 27.

[3] Not KALIDAS, the author of *Sacontala*, to whom Sir W. Jones awards the title of "The Shakspeare of the East," but PANDITA KALIDAS, a Singhalese poet, none of whose verses have been preserved. His royal patron was Kumara Das, king of Ceylon, A.D. 513. For an account of Kalidas, see DE ALWIS's *Sidath Sangara*, p. cliv.

[4] PLINY, lib. vi. c. 24.

[5] AMMIANUS MARCELLINUS, lib. xx. c. 7.

[6] KLAPROTH doubts, "si la science de l'Europe a produit jusqu'à présent un ouvrage de ce genre aussi bien exécuté et capable de soutenir la comparaison avec cette encyclopédie chinoise."—*Journ. Asiat.* tom. xxi. p. 3. See also *Asiatic Journal*, London, 1832, vol. xxxv. p. 110. It has been often reprinted in 100 large

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first entered into political relations with China in the fourth century.[1] It was about the year 400 A.D., says the author, "in the reign of the Emperor Nyan-ti, that ambassadors arrived from Ceylon bearing a statue of Fo in jade-stone four feet two inches high, painted in five colours, and of such singular beauty that one would have almost doubted its being a work of human ingenuity. It was placed in the Buddhist temple at Kien-Kang (Nankin)." In the year 428 A.D., the King of Ceylon (Maha Nama) sent envoys to offer tribute, and this homage was repeated between that period and A.D. 529, by three other Singhalese kings, whose names it is difficult to identity with their Chinese designations of Kia-oe, Kia-lo, and the Ho-li-ye. A.D. 400.

In A.D. 670, another ambassador arrived from Ceylon, and A.D. 742, Chi-lo-mi-kia sent presents to the Emperor of China consisting of pearls (*perles de feu*), golden flowers, precious stones, ivory, and pieces of fine cotton cloth. At a later period mutual intercourse became frequent between the two countries, and some of the Chinese travellers who resorted to Ceylon have left valuable records as to the state of the island.

It was during the reign of Maha Nama, about the year 413 A.D., that Ceylon was visited by Fa Hian, and the statements of the *Mahawanso* are curiously corroborated by the observations recorded by this Chinese traveller. He describes accurately the geniality of the climate, whose uniform temperature rendered the seasons undistinguishable. Winter and summer, he says, are alike unknown, but perpetual verdure realises the idea of a A.D. 413.

volumes. M. STANISLAS JULIEN says that in another Chinese work *Pien-i-tien*, or *The History of Foreign Nations*, there is a compilation including every passage in which Chinese authors have written of Ceylon, which occupies about forty pages 4to. *Ib.* tom. xxix. p. 39. A number of these authorities will be found extracted in the chapter in which I have described the intercourse between China and Ceylon, Vol. I. P. v. ch. iii.

[1] Between the years 317 and 420 A.D.—*Journ. Asiat.* tom. xxviii. p. 401.

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A.D. 432. perennial spring, and periods for seed time and harvest are regulated by the taste of the husbandman. This statement has reference to the multitude of tanks which rendered agriculture independent of the periodical rains.

Fa Hian speaks of the lofty monuments which were the memorials of Buddha, and of the gems and gold which adorned his statues at Anarajapoora. Amongst the most surprising of these was a figure in what he calls "blue jasper," inlaid with jewels and other precious materials, and holding in one hand a pearl of inestimable value.[1] He describes the Bo-tree in terms which might almost be applied to its actual condition at the present day, and he states that they had recently erected a building to contain "the tooth of Buddha," which was exhibited to the pious in the middle of the third moon with processions and ceremonies which he minutely details.[2] All this corresponds closely with the narrative of the *Mahawanso*. The sacred tooth of Buddha, called at that time *Dáthá dhátu*, and now the *Dalada*, had been brought to Ceylon a short time before Fa Hian's arrival in the reign of Kisti-Sri-Megha-warna, A.D. 311, in charge of a princess of Kalinga, who concealed it in the folds of her hair. And the *Mahawanso* with equal precision describes the procession as conducted by the king and by the assembled priests, in

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[1] It was whilst looking at this statue that FA HIAN encountered an incident which he has related with touching simplicity:—"Depuis que FA HIAN avait quitté la *terre de Han*, plusieurs années s'étaient écoulées; les gens avec lesquels il avait des rapports étaient tous des hommes de contrées étrangères. Les montagnes, les rivières, les herbes, les arbres, tout ce qui avait frappé ses yeux était nouveau pour lui. De plus, ceux qui avaient fait route avec lui, s'en étaient séparés, les uns s'étant arrêtés, et les autres étant morts. En réfléchissant au passé, son cœur était toujours rempli de pensées et de tristesse. Tout à coup, à côté de cette figure de jaspe, il vit un marchand qui faisait hommage à la statue d'un éventail de taffetas blanc du pays de *Tsin*. Sans qu'on s'en aperçût cela lui causa une émotion telle que ses larmes coulèrent et remplirent ses yeux." (FA HIAN. *Foë Kouë Ki*, ch. xxxviii. p. 333.) "Tsin" means the province of Chensi, which was the birthplace of Fa Hian.

[2] FA HIAN, *Foë Kouë Ki*, ch. xxxviii. p. 334-5.

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which the tooth was borne along the streets of Anarajapoora amidst the veneration of the multitude.[1] A.D. 459.

One of the most striking events in this period of Singhalese history was the murder of the king, Dhatu Sena, A.D. 459, by his son, who seized the throne under the title of Kasyapa I. The story of this outrage, which is highly illustrative of the superstition and cruelty of the age, is told with much feeling in the *Mahawanso;* the author of which, Mahanamo, was the uncle of the outraged king. Dhatu Sena was a descendant of the royal line, whose family were living in retirement during the usurpation of the Malabars, A.D. 434 to 459. As a youth he had embraced the priesthood, and his future eminence was foretold by an omen. "On a certain day, when chaunting at the foot of a tree, when a shower of rain fell, a cobra de capello encircled him with its folds and covered his book with its hood."[2] He was educated by his uncle, Mahanamo, and in process of time, surrounding himself with adherents, he successfully attacked the Malabars, defeated two of their chiefs in succession, put three others to death, recovered the native sovereignty of Ceylon, "and the religion which had been set aside by the foreigners,

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[1] *Mahawanso,* ch. xxxvii. p. 241, 249. After the funeral rites of Gotama Buddha had been performed at Kusinara, B.C. 543, his "left canine tooth" was carried to Dantapura, the capital of Kalinga, where it was preserved for 800 years. The King of Calinga, in the reign of Maha Sen, being on the point of engaging in a doubtful conflict, directed, in the event of defeat, that the sacred relic should be conveyed to Ceylon, whither it was accordingly taken as described (*Rajavali*, p. 240.) Between A.D. 1303 and 1315 the tooth was carried back to Southern India by the leader of an army, who invaded Ceylon and sacked *Yapahoo,* which was then the capital. The succeeding monarch, Prakrama III., went in person to Madura to negotiate its surrender, and brought it back to Pollanarrua. Its subsequent adventures and its final destruction by the Portuguese, as recorded by DE COUTO and others, will be found in a subsequent passage, see Vol. II. P. VII. ch. v. The Singhalese maintain that the Dalada, still treasured in its strong tower at Kandy, is the genuine relic, which was preserved from the Portuguese spoilers by secreting it at Delgamoa in Saffragam.

TURNOUR's *Account of the Tooth Relic of Ceylon; Journal of the Asiatic Society of Bengal,* 1837, vol. vi. p. 2, p. 856.

[2] This is a frequent traditionary episode in connection with the heroes of Hindu history.—*Asiat. Researches,* vol. xv. p. 275.

A.D. 459. he restored to its former ascendency." He recalled the fugitive inhabitants to Anarajapoora; degraded the nobles who had intermarried with the Malabars, and vigorously addressed himself to repair the sacred edifices and to restore fertility to the lands which had been neglected during their hostile occupation by the strangers. He applied the jewels from his head-dress to replace the gems of which the statue of Buddha had been despoiled. The curled hair of the divine teacher was represented by sapphires, and the lock on his forehead by threads of gold.

The family of the king consisted of two sons and a daughter, the latter married to his nephew, who "caused her to be flogged on the thighs with a whip although she had committed no offence;" on which the king, in his indignation, ordered the mother of her husband to be burned. His nephew and eldest son now conspired to dethrone him, and having made him a prisoner, the latter "raised the chatta" (the white parasol emblematic of royalty), and seized on the supreme power. Pressed by his son to discover the depository of his treasures, the captive king entreated to be taken to Kalawapi, under the pretence of pointing out the place of their concealment, but in reality with a determination to prepare for death, after having seen his early friend Mahanamo, and bathed in the great tank which he himself had formerly constructed. The usurper complied, and assigned for the journey a "carriage with broken wheels," the charioteer of which shared his store of "parched rice" with the fallen king. "Thus worldly prosperity," says Mahanamo, who lived to write the sad story of the interview, "is like the glimmering of lightning, and what reflecting man would devote himself to its pursuit!" The Raja approached his friend and, "from the manner these two persons discoursed, side by side, mutually quenching the fire of their afflictions, they appeared as if endowed with royal prosperity. Having allowed him to eat, the thero (Mahanamo) in

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various ways administered consolation and abstracted his mind from all desire to prolong his existence." The king then bathed in the tank; and pointing to his friend and to it, "these," he exclaimed to the messengers, "are all the treasures I possess." A.D. 459.

He was conducted back to the capital; and Kasyapa, suspecting that the king was concealing his riches for his second son, Mogallana, gave the order for his execution. Arrayed in royal insignia, he repaired to the prison of the raja, and continued to walk to and fro in his presence; till the king, perceiving his intention to wound his feelings, said mildly, "Lord of statesmen, I bear the same affection towards you as to Mogallana." The usurper smiled and shook his head; then stripping the king naked and casting him into chains, he built up a wall, imbedding him in it with his face towards the east, and enclosed it with clay: "thus the monarch Dhatu-Sena, who was murdered by his son, united himself with Sakko the ruler of Devos."[1] A.D. 477.

The parricide next directed his groom and his cook to assassinate his brother, who, however, escaped to the coast of India.[2] Failing in the attempt, he repaired to Sihagiri, a place difficult of access to men, and having cleared it on all sides, he surrounded it with a rampart. He built three habitations, accessible only by flights of steps, and ornamented with figures of lions (siho), whence the fortress takes it name, *Siha-giri*, "the Lion Rock." Hither he carried the treasures of his father, and here he built a palace, "equal in beauty to the celestial mansion." He erected temples to Buddha, and

[1] *Mahawanso*, ch. xxxviii. To this hideous incident Mahanamo adds the following curious moral: "This Raja Dhatu Sena, at the time he was improving the Kalawapi tank, observed a certain priest absorbed in meditation, and not being able to rouse him from abstraction, had him buried under the embankment by heaping earth over him. His own living entombment *was the retribution* manifested in this life for that impious act."

[2] I am indebted to the family of the late Mr. Turnour for access to a manuscript translation of a further portion of the *Mahawanso*, from which this continuation of the narrative is extracted.

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A.D. 477. monasteries for his priests, but conscious of the enormity of his crimes, these endowments were conferred in the names of his minister and his children. Failing to

FORTIFIED ROCK OF SIGIRI.

"derive merit" from such acts, stung with remorse, and anxious to test public feeling, he enlarged his deeds of charity, he formed gardens at the capital; and planted groves of mangoes throughout the island. Desirous to enrich a wihara at Anarajapoora, he proposed to endow it with a village, but "the ministers of religion, regardful of the reproaches of the world, declined accepting gifts at the hands of a parricide. Kasyapa, bent on befriending them, dedicated the village to Buddha, after which they consented, *on the ground that it was then the property of the divine teacher.*" Impelled, says the *Mahawanso*, by the irrepressible dread of a future existence, he strictly performed his "aposaka"[1] vows, practised the virtue of non-procrastination, acquired the "dathanga,"[2] and caused books to be written, and image and alms-edifices to be formed.

Meanwhile, after an interval of eighteen years, Mogallana, having in his exile collected a sufficient force, returned from India to avenge the murder of his father;

[1] A lay devotee who takes on himself the obligation of asceticism without putting on the yellow robe.

[2] The dathanga or "teles-dathanga" are the thirteen ordinances by which the cleaving to existence is destroyed, involving piety, abstinence, and self-mortification. — Hardy's *Eastern Monachism*, ch. ii. p. 9.

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and the brothers encountered each other in a decisive engagement at Ambatthakolo in the Seven Corles. Kasyapa, perceiving a swamp in his front, turned the elephant which he rode into a side path to avoid it; on which his army in alarm raised the shout that "their liege lord was flying," and in the confusion which followed, Mogallana, having struck off the head of his brother, returned the krese to its scabbard, and led his followers to take possession of the capital; where he avenged the death of his father, by the execution of the minister who had consented to it. He established a marine force to guard the island against the descents of the Malabars, and "having purified both the orthodox dharma[1], and the religion of the vanquisher, he died, after reigning eighteen years, signalised by acts of piety."[2] This story as related by its eye-witness, Mahanamo, forms one of the most characteristic, as well as the best authenticated episodes of contemporary history presented by the annals of Ceylon. A.D. 495.

Such was the feebleness of the royal house, that of the eight kings who succeeded Mogallana between A.D. 515 and A.D. 586, two died by suicide, three by murder, and one from grief occasioned by the treason of his son. The anarchy consequent upon such disorganisation stimulated the rapacity of the Malabars; and the chronicles of the following centuries are filled with the accounts of their descents on the island and the misery inflicted by their excesses. A.D. 515.

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[1] The doctrines of Buddha.

[2] *Mahawanso,* ch. xxxix. Manuscript translation by TURNOUR. TURNOUR, in his *Epitome,* says Kasyapa "committed suicide on the field of battle," but this does not appear from the narrative of the *Mahawanso.*

CHAP. X.

THE DOMINATION OF THE MALABARS.

A.D. 515. It has been already explained that the invaders who engaged in forays into Ceylon, though known by the general epithet of Malabars (or as they are designated in Pali, *damilos*, "Tamils"), were also natives of places in India remote from that now known as Malabar. They were, in reality, the inhabitants of one of the earliest states organised in Southern India, the kingdom of Pandya[1], whose sovereigns, from their intelligence, and their encouragement of native literature, have been appropriately styled "the Ptolemies of India." Their dominions, which covered the extremity of the peninsula, comprehended the greater portion of the Coromandel coast, extending to Canara on the western coast, and southwards to the sea.[2] Their kingdom was subsequently contracted in dimensions, by the successive independence of Malabar, the rise of the state of Chera to the west, of Ramnad to the south, and of Chola in the east, till it sank in modern times into the petty government of the Naicks of Madura.[3]

The relation between this portion of the Dekkan and the early colonisers of Ceylon was rendered intimate by many concurring incidents. Wijayo himself was connected by maternal descent with the king of

[1] Pandya, as a kingdom, was not unknown in classical times, and its ruler was the Βασιλευς Πανδιων mentioned in the *Periplus of the Erythræan Sea*, and the king Pandion, who sent an embassy to Augustus.—PLINY, vi. 26; PTOLEMY, vii. 1.

[2] See an *Historical Sketch of the Kingdom of Pandya*, by Prof. H.H. WILSON, *Asiat. Journ.*, vol. iii.

[3] See *ante*, p. 353, n.

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Kalinga[1], now known as the Northern Circars; his second wife was the daughter of the king of Pandya, and the ladies who accompanied her to Ceylon were given in marriage to his ministers and officers.[2] Similar alliances were afterwards frequent; and the Singhalese annalists allude on more than one occasion to the "damilo consorts" of their sovereigns.[3] Intimate intercourse and consanguinity were thus established from the remotest period. Adventurers from the opposite coast were encouraged by the previous settlers; high employments were thrown open to them, Malabars were subsidised both as cavalry and as seamen; and the first abuse of their privileges was in the instance of the brothers Sena and Goottika, who, holding naval and military commands, took advantage of their position and seized on the throne, B.C. 237; apparently with such acquiescence on the part of the people, that even the *Mahawanso* praises the righteousness of their reign, which was prolonged to twenty-two years, when they were put to death by the rightful heir to the throne.[4] A.D. 515.

The easy success of the first usurpers encouraged the ambition of fresh aspirants, and barely ten years elapsed till the *first* regular invasion of the island took place, under the illustrious Elala, who, with an army from Mysore (then called Chola or Soli), subdued the entire of Ceylon, north of the Mahawelli-ganga, and compelled the chiefs of the rest of the island, and the kings of Rohuna and Maya, to acknowledge his supremacy and become his tributaries.[5] As in the instance of the previous revolt, the people exhibited such faint resistance to the usurpation, that the reign of Elala extended to forty-four years. It is difficult to conceive that their quiescence under a stranger was entirely ascribable to the

[1] *Mahawanso,* ch. vi. p. 43.

[2] *Mahawanso,* ch. vii. p. 53; the *Rajavali* (p. 173,) says they were 700 in number.

[3] *Mahawanso,* ch. xxxviii. p. 253.

[4] *Mahawanso,* ch. xxi. p. 127.

[5] TURNOUR'S *Epitome,* p. 17; *Mahawanso,* ch. xxi. p. 128; *Rajavali,* p. 188.

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A.D. 515. fact, that the rule of the Malabars, although adverse to Buddhism, was characterised by justice and impartiality. Possibly they recognised to some extent their pretensions, as founded on their relationship to the legitimate sovereigns of the island, and hence they bore their sway without impatience.[1]

The majority of the subsequent invasions of Ceylon by the Malabars partook less of the character of conquest than of forays, by a restless and energetic race, into a fertile and defenceless country. Mantotte, on the north-west coast, near Adam's Bridge, became the great place of debarcation; and here successive bands of marauders landed time after time without meeting any effectual resistance from the unwarlike Singhalese.

The *second* great invasion took place about a century after the first, B.C. 103, when seven Malabar leaders effected simultaneous descents at different points of the coast[2], and combined with a disaffected "Brahman prince" of Rohuna, to force Walagam-bahu I. to surrender his sovereignty. The king, after an ineffectual show of resistance, fled to the mountains of Malaya; one of the invaders carried off the queen to the coast of India; a third despoiled the temples of Anarajapoora and retired, whilst the others continued in possession of the capital for nearly fifteen years, till Walagam-bahu, by the aid of the Rohuna highlanders, succeeded in recovering the throne.

The *third* great invasion on record[3] was in its cha-

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[1] See *ante*, p. 360, n.

[2] TURNOUR's *Epitome*, p. 16. The *Mahawanso* says they landed at "Mahatittha."—*Mantotte*, ch. xxxiii. p. 203.

[3] This incursion of the Malabars is not mentioned in the *Mahawanso*, but it is described in the *Rajavali*, p. 229, and mentioned by TURNOUR, in his *Epitome*, &c., p. 21. There is evidence of the conscious supremacy of the Malabars over the north of Ceylon, in the fourth century, in a very curious document, relating to that period. The existence of a colony of Jews at Cochin, in the south-western extremity of the Dekkan, has long been known in Europe, and half a century ago, particulars of their condition and numbers were published by Dr. Claudius Buchanan. (*Christian Researches*, &c.) Amongst other facts, he made known their possession of Hebrew MSS. demonstrative of the great antiquity of their settlement in India, and also of their

racter still more predatory than those which preceded A.D.
it, but it was headed by a king in person, who carried 515,
away 12,000 Singhalese as slaves to Mysore. It occurred in the reign of Waknais, A.D. 110, whose son Gaja-bahu, A.D. 113, avenged the outrage by invading the Solee country with an expedition which sailed from Jaffnapatam, and brought back not only the rescued Singhalese captives, but also a multitude of Solleans, whom the king established on lands in the Alootcoor Corle, where the Malabar features are thought to be discernible to the present day.[1]

A long interval of repose followed, and no fresh expedition from India is mentioned in the chronicles of Ceylon till A.D. 433, when the capital was again taken by the Malabars; the Singhalese families fled beyond the Mahawelli-ganga; and the invaders occupied the entire extent of the Pihiti Ratta, where for twenty-seven years, five of them in succession administered the government, till Dhatu Sena collected forces sufficient to overpower the strangers, and, emerging from his retreat in Rohuna, recovered possession of the north of the island.[2]

Dhatu Sena, after his victory, seems to have made an attempt, though an ineffectual one, to reverse the policy which had operated under his predecessors as an incentive to the immigration of Malabars; settlement

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title deeds of land (*sasanams*), engraved on plates of copper, and presented to them by the early kings of that portion of the peninsula. Some of the latter have been carefully translated into English (see *Madras Journ.*, vol. xiii. xiv.). One of their MSS. has recently been brought to England, under circumstances which are recounted by Mr. FORSTER, in the third vol. of his *One Primeval Language*, p. 303. This MS. I have been permitted to examine. It is in corrupted Rabbinical Hebrew, written about the year 1781, and contains a partial synopsis of the modern history of the section of the Jewish nation to whom it belongs; with accounts of their arrival in the year A.D. 68, and of their reception by the Malabar kings. Of one of the latter, frequently spoken of by the honorific style of SRI PERUMAL, but identifiable with IRAVI VARMAR, who reigned A.D. 379, the manuscript says that his "*rule extended from Goa to Colombo.*"

[1] CASIE CHITTY, *Ceylon Gazetteer*, p. 7.

[2] *Rajavali*, p. 243; TURNOUR'S *Epitome*, p. 27.

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A.D. 515. and intermarriages had been all along encouraged[1], and even during the recent usurpation, many Singhalese families of rank had formed connexions with the Damilos. The schisms among the Buddhists themselves, tending as they did to engraft Brahmanical rites upon the doctrines of the purer faith, seem to have promoted and matured the intimacy between the two people; some of the Singhalese kings erected temples to the gods of the Hindus[2], and the promoters of the Wytulian heresy found a refuge from persecution amongst their sympathisers in the Dekkan.[3]

The Malabars, trained to arms, now resorted in such numbers to Ceylon, that the leaders in civil commotions were accustomed to hire them in bands to act against the royal forces[4]; and whilst no precautions were adopted to check the landing of marauders on the coast, the invaders constructed forts throughout the country to protect their conquests from recapture by the natives. Proud of these successful expeditions, the native records of the Chola kings make mention of their victories; and in one of their grants of land, engraved on copper, and still in existence, Viradeva-Chola, the sovereign by whom it was made, is described as having triumphed over "Madura, Izham, Caruvar, and the crowned head of Pandyan;" Izham (or Ilám) being the Tamil name of Ceylon.[5] On their expulsion by Dhatu Sena, he took possession of the fortresses and extirpated the Damilos; degraded the Singhalese who had intermarried with them; confiscated their estates in favour of those who had remained true to his cause;

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[1] Anula, the queen of Ceylon, A.D. 47, met with no opposition in raising one of her Malabar husbands to the throne.—TURNOUR's *Epitome*, p. 19. Sotthi Sena, who reigned A.D. 432, had a Damilo queen.—*Mahawanso*, ch. xxxviii. p. 253.

[2] Sri Sanga Bo III. A.D. 702, "made a figure of the God Vishnu; and was a supporter of the religion of Buddha, and a friend of the people." — *Rajaratnacari*, p. 78.

[3] *Mahawanso*, ch. xxxvii. p. 234; TURNOUR's *Epitome*, p. 25.

[4] *Mahawanso*, ch. xxxvi. p. 228.

[5] DOWSON, on the Chera Kingdom of India.—*Asiat. Journ.* vol. viii. p. 24.

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and organised a naval force for the protection of the coasts[1] of the island. A.D. 515.

But his vigorous policy produced no permanent effect; his son Mogallana, after the murder of his father and the usurpation of Kasyapa, fled for refuge to the coast of India, and subsequently recovered possession of the throne, by the aid of a force which he collected there.[2] In the succession of assassinations, conspiracies, and civil wars, which distracted the kingdom in the sixth and seventh centuries, during the struggles of the rival branches of the royal house, each claimant, in his adversity, betook himself to the Indian continent, and Malabar mercenaries from Pandya and Soli enrolled themselves indifferently under any leader, and deposed or restored kings at their pleasure.[3]

The *Rajavali*, in a single passage enumerates fourteen sovereigns who were murdered each by his successor, between A.D. 523, and A.D. 648. During a period of such violence and anarchy, peaceful industry was suspended, and extensive emigrations took place to Bahar and Orissa. Buddhism, however, was still predominant, and protection was accorded to its professors. A.D. 523.

Hiouen Thsang, a Chinese traveller, who visited India between 629 A.D. and 645[4], encountered numbers of exiles, who informed him that they fled from civil commotions in Ceylon, in which religion had undergone persecution, the king had lost his life, cultivation had been interrupted, and the island exhausted by famine. This account of the Chinese voyager accords accurately with the events detailed in the Singhalese annals, in which it is stated that Sanghatissa was deposed and murdered, A.D. 623, by the Seneriwat, A.D. 640.

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[1] *Mahawanso*, ch. xxxviii. p. 256. and xxxix. TURNOUR's MS., *Trans.*

[2] TURNOUR's *Epitome*, p. 29; *Rajavali*, p. 244.

[3] TURNOUR's *Epitome*, p. 31. *Rajavali*, p. 247.

[4] *Histoire de la Vie de Hiouen Thsang, et de ses Voyages dans L'Inde depuis l'an* 629 *jusqu'en* 645. *Par* HOEI-LI *et* YEN-THSANG, *&c. Traduite du Chinois, par* STANISLAUS JULIEN, Paris, 1853.

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A.D. 640. his minister, who, amidst the horrors of a general famine, was put to death by the people of Rohuna, and a civil war ensued; one result of which was the defeat of the Malabar mercenaries and their distribution as slaves to the temples. Hiouen Thsang relates the particulars of his interviews with the fugitives, from whom he learned the extraordinary riches of Ceylon, the number and wealth of its wiharas, the density of its population in peaceful times, the fertility of its soil, and the abundance of its produce.[1]

For nearly four hundred years, from the seventh till the eleventh century, the exploits and escapes of the Malabars occupy a more prominent portion of the Singhalese annals than that devoted to the policy of the native sovereigns. They filled every office, including that of prime minister[2], and they decided the claims of competing candidates for the crown. At length the island became so infested by their numbers that the feeble monarchs found it impracticable to effect their exclusion from Anarajapoora[3]; and to escape from their proximity, the kings in the eighth century began to move southwards, and transferred their residence to Pollanarrua, which eventually became the capital of the kingdom. Enormous tanks were constructed in the vicinity of the new capital; palaces were erected, surpassing those of the old city in architectural beauty; dagobas were raised, nearly equal in altitude to the Thuparama and Ruanwelli, and temples and statues were hewn out of the living rock, the magnitude and beauty of whose ruins attest the former splendour of Pollanarrua.[4]

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[1] "Ce royaume a sept mille li de tour, et sa capitale quarante li; la population est agglomérée, et la terre produit des grains en abondance."—HIOUEN-THSANG, liv. iv. p. 194.

[2] TURNOUR'S *Epitome*, p. 33.

[3] TURNOUR'S *Epitome*, A.D. 686, p. 31.

[4] The first king who built a palace at Pollanarrua was Sri Sanga Bo II., A.D. 642. His successor, Sri Sanga Bo III., took up his residence there temporarily, A.D. 702; it was made the capital by Kuda Akbo, A.D. 769, and its embellishment, the building of colleges, and the formation of tanks in its vicinity, were the occupations of numbers of his successors.

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Notwithstanding their numbers and their power, it is remarkable that the Malabars were never identified with any plan for promoting the prosperity and embellishment of Ceylon, or with any undertaking for the permanent improvement of the island. Unlike the Gangetic race, who were the earliest colonists, and with whom originated every project for enriching and adorning the country, the Malabars aspired not to beautify or enrich, but to impoverish and deface;—and nothing can more strikingly bespeak the inferiority of the southern race than the single fact that everything tending to exalt and to civilise, in the early condition of Ceylon, was introduced by the northern conquerors, whilst all that contributed to ruin and debase it is distinctly traceable to the presence and influence of the Malabars. A.D. 640.

The Singhalese, either paralysed by dread, made feeble efforts to rid themselves of the invaders; or fascinated by their military pomp, endeavoured to conciliate them by alliances. Thus, when the king of Pandya over-ran the north of Ceylon, A. D. 840, plundered the capital and despoiled its temples, the unhappy sovereign had no other resource than to purchase the evacuation of the island by a heavy ransom.[1] Yet such was the influence still exercised by the Malabars, that within a very few years his successor on the throne lent his aid to the son of the same king of Pandya in a war against his father, and conducted the expedition in person.[2] His army was, in all probability, composed chiefly of Damilos, with whom he overran the south of the Indian peninsula, and avenged the outrage inflicted on his own kingdom in the late reign by bearing back the plunder of Madura. A.D. 840.

This exploit served to promote a more intimate intercourse between the two races, and after the lapse of a

[1] TURNOUR'S *Epitome*, p. 35; *Rajaratnacari*, p. 79.

[2] A. D. 858; *Rajaratnacari*, p. 84.

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A.D. 954. century, A. D. 954, the king of Ceylon a second time interposed with an army to aid the Pandyan sovereign, in a quarrel with his neighbour of Chola, wherein the former was worsted, and forced to seek a refuge in the territory of his insular ally, whence he was ultimately expelled for conspiracy against his benefactor. Having fled to India without his regalia, his Cholian rival made the refusal of the king of Ceylon to surrender them the pretext for a fresh Malabar invasion, A. D. 990, when the enemy was repulsed by the mountaineers of Rohuna, who, from the earliest period down to the present day, have evinced uniform impatience of strangers, and steady determination to resist their encroachments.

But such had been the influx of foreigners, that the efforts of these highland patriots were powerless against A.D. 997. their numbers. Mahindo III., A. D. 997, married a princess of Calinga[1], and in a civil war which ensued, during the reign of his son and successor, the novel spectacle was presented of a Malabar army supporting the cause of the royal family against Singhalese insurgents. The island was now reduced to the extreme of anarchy and insecurity; "the foreign population" had increased to such an extent as to gain a complete ascendency over the native inhabitants, and the sovereign had lost authority over both.[2]

A.D. 1023. In A. D. 1023, the Cholians again invaded Ceylon[3], carried the king captive to the coast of India (where he died in exile), and established a Malabar viceroy at Pollanarrua, who held possession of the island for nearly thirty years, protected in his usurpation by a foreign army. Thus "throughout the reign of nineteen kings," says the *Rajaratnacari*, "extending over eighty-six years, the Malabars kept up a continual war with the Singhalese, till they filled by degrees every village in the island."[4]

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[1] Now the Northern Circars.

[2] Turnour's *Epitome*, p. 37.

[3] In the reign of Mahindo IV.

[4] *Rajaratnacari*, p. 85.

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During the absence of the rightful sovereign, and in the confusion which ensued on his decease, various members of the royal family arrived at the sovereignty of Rohuna, the only remnant of free territory left. Four brothers, each assuming the title of king, contended together for supremacy; and amidst anarchy and intrigue, each in turn took up the reins of government, as they fell or were snatched from the hands of his predecessor [1], till at length, on the retirement of all other candidates, the forlorn crown was assumed by the minister Lokaiswara, who held his court at Kattragam, and died A. D. 1071.[2] A.D. 1028.

[1] TURNOUR's *Epitome*, p. 39. [2] *Mahawanso*, ch. lxi.

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CHAP. XI.

THE REIGN OF PRAKRAMA BAHU.

A.D. 1071. FROM the midst of this gloom and despondency, with usurpation successful in the only province where even a semblance of patriotism survived, and a foreign enemy universally dominant throughout the rest of Ceylon, there suddenly arose a dynasty which delivered the island from the sway of the Malabars, brought back its ancient wealth and tranquillity, and for the space of a century made it pre-eminently prosperous at home and victorious in expeditions by which its rulers rendered it respected abroad.

The founder of this new and vigorous race was a member of the exiled family, who, on the death of Lokaiswara, was raised to the throne under the title of Wijayo Bahu.[1] Dissatisfied with the narrow limits of Rohuna, he resolved on rescuing Pihiti from the usurping strangers; and, by the courage and loyalty of his mountaineers, he recovered the ancient capitals from the Malabars, compelled the whole extent of the island to acknowledge his authority, reunited the several kingdoms of Ceylon under one national banner, and, "for the security of Lanka against foreign invasion, placed trustworthy chiefs at the head of paid troops, and stationed them round the coast."[2] Thus signally successful at home, the fame of his exploits "extended

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[1] A. D. 1071.

[2] *Mahawanso,* ch. lix.; *Rajaratnacari,* p. 58; *Rajavali,* p. 251; TURNOUR'S *Epitome,* p. 39.

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over all Dambadiva[1], and ambassadors arrived at his court from the sovereigns of India and Siam."

As he died without heirs a contest arose about the succession, which threatened again to dissever the unity of the kingdom by arraying Rohuna and the south against the brother of Wijayo Bahu, who had gained possession of Pollanarrua. But in this emergency the pretensions of all other claimants to the crown were overruled in favour of Prakrama, a prince of accomplishments and energy so unrivalled as to secure for him the partiality of his kindred and the admiration of the people at large. A.D. 1126.

He was son to the youngest of four brothers who had recently contended together for the crown, and his ambition from childhood had been to rescue his country from foreign dominion, and consolidate the monarchy in his own person. He completed by foreign travel an education which, according to the *Mahawanso*, comprised every science and accomplishment of the age in which he lived, including theology, medicine, and logic; grammar, poetry, and music; the training of the elephant and the management of the horse.[2]

On the death of his father he was proclaimed king by the people, and a summons was addressed by him to his surviving uncle, calling on him to resign in his favour and pay allegiance to his supremacy. As the feeling of the nation was with him, the issue of a civil war left him master of Ceylon. He celebrated his coronation as King of Pihiti at Pollanarrua, A. D. 1153, and two years later, after reducing the refractory chiefs of Rohuna to obedience, he repeated the ceremonial by crowning himself "sole King of Lanka."[3] A.D. 1153.

There is no name in Singhalese history which holds the same rank in the admiration of the people as that of Prakrama Bahu, since to the piety of Devenipiatissa he united the chivalry of Dutugaimunu.

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[1] India Proper. [2] *Mahawanso*, ch. lxiv. [3] *Mahawanso*; ch. lxxi.

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A.D. 1155. The tranquillity insured by the independence and consolidation of his dominions, he rendered subservient to the restoration of religion, the enrichment of his subjects, and the embellishment of the ancient capitals of his kingdom; and, ill-satisfied with the inglorious ease which had contented his predecessors, he aspired to combine the renown of foreign conquests with the triumphs of domestic policy.

Faithful to the two grand objects of royal solicitude, religion and agriculture, the earliest attention of Prakrama was directed to the re-establishment of the one, and the encouragement and extension of the other. He rebuilt the temples of Buddha, restored the monuments of religion in more than their pristine splendour, and covered the face of the kingdom with works for irrigation to an extent which would seem incredible did not their existing ruins corroborate the historical narrative of his stupendous labours.

Such had been the ostensible decay of Buddhism during the Malabar domination that, when the kingdom was recovered from them by Wijayo Bahu, A.D. 1071, "there was not to be found in the whole island five tirunansis," and an embassy was sent to Arramana[1] to request that members of this superior rank of the priesthood might be sent to restore the order in Ceylon.[2]

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[1] A part of the Chin-Indian peninsula, probably between Arracan and Siam.

[2] *Rajaratnacari*, p. 85; *Rajavali*, p. 252; *Mahawanso*, ch. lx.

From the identity of the national faith in the two countries, intercourse existed between Siam and Ceylon from time immemorial. At a very early period missions were interchanged for the inter-communication of Pali literature, and in later times, when, owing to the oppression of the Malabars certain orders of the priesthood had become extinct in Ceylon, it became essential to seek a renewal of ordination at the hands of the Siamese hierarchy (*Rajaratnacari*. p. 86). In the numerous incursions of the Malabars from Chola and Pandya, the literary treasures of Ceylon were deliberately destroyed, and the *Mahawanso* and *Rajavali* make frequent lamentations over the loss of the sacred books. (See also *Rajaratnacari*, pp. 77, 95, 97.) At a still later period the savage Raja Singha, who reigned between A.D. 1581 and 1592, and became a convert to Brahmanism, sought eagerly for Buddhistical books, and "delighted in burning them in heaps as high as a coco-nut tree." These losses it was sought to repair by an embassy to Siam, sent by Kirti Sri in A.D. 1753, when a copious supply was obtained of Burmese versions of Pali sacred literature.

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During the same troublous times, schisms and heresy had combined to undermine the national belief, and hence one of the first cares of Prakrama Bahu was to weed out the perverted sects, and establish a council for the settlement of the faith on debatable points.[1] Dagobas and statues of Buddha were multiplied without end during his reign, and temples of every form were erected both at Pollanarrua and throughout the breadth of the island. Halls for the reading of bana, image rooms, residences for the priesthood, ambulance halls and rest houses for their accommodation when on journeys, were built in every district, and rocks were hollowed into temples; one of which, at Pollanarrua, remains to the present day with its images of Buddha; "one in a sitting and another in a lying posture," almost as described in the *Mahawanso*.[2] A.D. 1155.

In conformity with the spirit of toleration, which is one of the characteristics of Buddhism, the king "erected a house for the Brahmans of the capital to afford the comforts of religion even to his Malabar enemies." And mindful of the divine injunctions engraven on the rock by King Asoca, "he forbade the animals in the whole of Lanka, both of the earth and the water, to be killed,"[3] and planted gardens, "resembling the paradise of the God-King Sakkraia, with trees of all sorts bearing fruits and odorous flowers."

For the people the king erected almonries at the four gates of the capital, and hospitals, with slave boys and

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[1] *Mahawanso,* ch. lxxvii.

[2] *Mahawanso,* ch. lxxii. For a description of this temple see the account of Pollanarrua in the present work, Vol. II. Pt. x. ch. i.

[3] *Mahawanso,* ch. lxxvii. Among the religious edifices constructed by Prakrama Bahu in many parts of his kingdom, the *Mahawanso* enumerates three temples at Pollanarrua, besides others at every two or three gows distance; 101 dagobas, 476 statues of Buddha, and 300 image rooms built, besides 6100 repaired. He built for the reception of priests from a distance, "230 lodging apartments, 50 halls for preaching, and 9 for walking, 144 gates, and 192 rooms for the purpose of offering flowers. He built 12 apartments and 230 halls for the use of strangers, and 31 rock temples, with tanks, baths, and gardens for the priesthood."

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A.D. 1155. maidens to wait upon the sick, superintending them in person, and bringing his medical knowledge to assist in their direction and management.

Even now the ruins of Pollanarrua, the most picturesque in Ceylon, attest the care which he lavished on his capital. He surrounded it with ramparts, raised a fortress within them, and built a palace for his own residence, containing four thousand apartments. He founded schools and libraries; built halls for music and dancing; formed tanks for public baths; opened streets, and surrounded the whole city with a wall which, if we are to credit the native chronicles, enclosed an area twelve miles broad by nearly thirty in length.

By his liberality, Rohuna and Pihiti were equally embellished; the buildings of Vigittapura and Sigiri were renewed; and the ancient edifices at Anarajapoora were restored, and its temples and palaces repaired, under the personal superintendence of his minister. It is worthy of remark that so greatly had the constructive arts declined, even at that period, in Ceylon, that the king had to "bring Damilo artificers" from the opposite coast of India to repair the structures at his capital.[1]

The details preserved in the Singhalese chronicles as to the works for irrigation which he formed or restored, afford an idea of the prodigious encouragement bestowed upon agriculture in this reign, as well as of the extent to which the rule of the Malabars had retarded the progress and destroyed the earlier traces of civilisation. Fourteen hundred and seventy tanks were constructed by the king in various parts of the island, three of them of such vast dimensions that they were known as the "Seas of Prakrama;"[2] and in addition to these, three hundred others were formed by him for the special benefit of the priests. The "Great Lakes" which he repaired, as specified in the *Mahawanso*, amount to

[1] *Mahawanso*, ch. lxxv. lxxvii. | [2] *Rajaratnacari*, p. 88.

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thirteen hundred and ninety-five, and the smaller ones which he restored or enlarged to nine hundred and sixty. Besides these, he made five hundred and thirty-four watercourses and canals, by damming up the rivers, and repaired three thousand six hundred and twenty-one.[1] A.D. 1155.

The bare enumeration of such labours conveys an idea of the prodigious extent to which structures of this kind had been multiplied by the early kings; and we are enabled to form an estimate of the activity of agriculture in the twelfth century, and the vast population whose wants it supplied, by the thousands of reservoirs still partially used, though in ruins; and the still greater number now dry and deserted, and concealed by dense jungle, in districts once waving with yellow grain. Such was the internal tranquillity which, under his rule, pervaded Ceylon, that an inscription, engraved by one of his successors, on the rock of Dambool, after describing the general peace and "security which he established, as well in the wilderness as in the inhabited places," records that, "even a woman might traverse the island with a precious jewel and not be asked what it was."[2]

In the midst of these congenial operations the energetic king had command of military resources, sufficient not

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[1] The useful ambition of signalising their reign by the construction of works of irrigation, is still exhibited by the Buddhist sovereigns of the East, and the king of Burmah in his interview with the British envoy in 1855, advanced his exploits of this nature as his highest claim to distinction. The conversation is thus reported in YULE's *Narrative of the Mission*. London, 1858.

"*King*. Have you seen any of the royal tanks at Oung-ben-le', which have recently been constructed?

"*Envoy*. I have not been yet, your Majesty, but I purpose going.

"*King*. I have caused *ninety-nine* tanks and ancient reservoirs to be dug and repaired; and *sixty-six* canals: whereby a great deal of rice land will be available. * * * In the reign of Nauraba-dzyar 9999 tanks and canals were constructed: I purpose renewing them."—p. 109.

[2] Moore's melody, beginning "Rich and rare were the gems she wore," was founded on a parallel figure illustrative of the security of Ireland under the rule of King Brien; when, according to Warner, "a maiden undertook a journey alone, from one extremity of the kingdom to another, with only a wand in her hand, at the top of which was a ring of exceeding great value."

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A.D. 1155. only to repress revolt within his own dominions, but also to carry war into distant countries, which had offered him insult or inflicted injury on his subjects. His first foreign expedition was fitted out to chastise the king of Cambodia and Arramana[1] in the Siamese peninsula, who had plundered merchants from Ceylon, visiting those countries to trade in elephants; he had likewise intercepted a vessel which was carrying some Singhalese princesses, had outraged Prakrama's ambassador, and had dismissed him mutilated and maimed. A fleet sailed on this service in the sixteenth year of Prakrama's reign, he effected a landing in Arramana, vanquished the king, and obtained full satisfaction.[2] He next directed his arms against the Pandyan king, for the countenance which that prince had uniformly given to the Malabar invaders of the island. He reduced Pandya and Chola, rendered their sovereigns his tributaries, and having founded a city within the territory of the latter, and coined money in his own name, he returned in triumph to Ceylon.[3]

"Thus," says the *Mahawanso*, "was the whole island of Lanka improved and beautified by this king, whose majesty is famous in the annals of good deeds, who was faithful in the religion of Buddha, and whose fame extended abroad as the light of the moon."[4] "Having departed this life," adds the author of the *Rajavali*, "he was found on a silver rock in the wilderness of the Himalaya, where are eighty-four thousand mountains of gold, and where he will reign as a king as long as the world endures."[5]

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[1] See *ante*, p. 406 n.

[2] Turnour's *Epitome*, p. 41; *Mahawanso*, lxxiv.; *Rajaratnacari*, p. 87; *Rajavali*, p. 254.

[3] *Mahawanso*, ch. lxxvi. I am not aware whether the Tamil historians have chronicled this remarkable expedition, and the conquest of this portion of the Dekkan by the king of Ceylon; but in the catalogue of the Kings appended by Prof. Wilson to his *Historical Sketch of Pandya* (Asiat. Journ. vol. iii. p. 201) the name of "Pracrama Baghu" occurs as the sixty-fifth in the list of sovereigns of that state. For an account of Dipaldenia, where he probably coined his Indian money, see *Asiat. Soc. Journ. Bengal*, v. vi. pp. 218, 301.

[4] *Mahawanso*, ch. lxxviii.

[5] *Rajaratnacari*, p. 91.

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CHAP. XII.

FATE OF THE SINGHALESE MONARCHY.—ARRIVAL OF THE PORTUGUESE, A.D. 1501.

THE reign of Prakrama Bahu, the most glorious in the A.D.
annals of Ceylon, is the last which has any pretension to 1155.
renown. His family were unequal to sustain or extend
the honours he had won, and his nephew[1], a pious
voluptuary, by whom he was succeeded, was killed in A.D.
an intrigue with the daughter of a herdsman whilst 1186.
awaiting the result of an appeal to the Buddhist sove-
reign of Arramana to aid him in reforming religion.
His murderer, whom he had previously nominated his A.D.
successor, himself fell by assassination. An heir to the 1187.
throne was discovered amongst the Singhalese exiles on
the coast of India[2], but death soon ended his brief reign. A.D.
His brother and his nephew in turn assumed the crown; 1192.
both were despatched by the Adigar who, having allied A.D.
himself with the royal family by marrying the widow of 1196.
the great Prakrama, contrived to place her on the throne,
under the title of Queen Leela-Wattee, A.D. 1197. With- A.D.
in less than three years she was deposed by an usurper, 1197.
and he being speedily put to flight, another queen,
Kalyana-Wattee, was placed at the head of the kingdom. A.D.
The next ill-fated sovereign, a baby of three months 1202.

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[1] Wijayo Bahu II., killed by Mihindo, A.D. 1187.

[2] Kirti Nissanga, brought from Calinga, A.D. 1192.

A.D. 1202. old, was speedily set aside by means of a hired force, and the first queen, Leela-Wattee, restored to the throne. But the same band who had effected a revolution in her favour were prompt to repeat the exploit; she was a second time deposed, and a third time recalled by the intervention of foreign mercenaries.[1]

A.D. 1211. Within thirty years from the decease of Prakrama Bahu, the kingdom was reduced to such an extremity of weakness by contentions amongst the royal family, and by the excesses of their partisans, that the vigilant Malabars seized the opportunity to land with an army of 24,000 men, reconquered the whole of the island, and Magha, their leader, became king of Ceylon A.D. 1211.[2]

The adventurers who invaded Ceylon on this occasion came not from Chola or Pandya, as before, but from Calinga, that portion of the Dekkan which now forms the Northern Circars. Their domination was marked by more than ordinary cruelty, and the *Mahawanso* and *Rajaratnacari* describe with painful elaboration the extinction of Buddhism, the overthrow of temples, the ruin of dagobas, the expulsion of priests and the occupation of their dwellings by Damilos, the outrage of castes, the violation of property, and the torture of its possessors to extract the disclosure of their treasures, "till the whole island resembled a dwelling in flames or a house darkened by funeral rites."[3]

On all former occasions Rohuna and the South had been comparatively free from the actual presence of the enemy, but in this instance they established themselves

[1] Of the very rare examples now extant of Singhalese coins, one of the most remarkable bears the name of Leela-Wattee.—*Numismatic Chronicle*, 1853. *Papers on some Coins of Ceylon, by* W. S. W. VAUX, *Esq.*, p. 126.

[2] *Rajavali*, p. 256.

[3] *Mahawanso*, ch. lxxix.; *Rajaratnacari*, p. 93; *Rajavali*, p. 256.

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at Mahagam [1], and thence to Jaffnapatam, every province in the island was brought under subjection to their rule. A.D. 1211.

The peninsula of Jaffna and the extremity of the island north of Adam's Bridge, owing to its proximity to the Indian coast, was at all times the district most infested by the Malabars. Jambukola, the modern Colombogam, is the port which is rendered memorable in the *Mahawanso* by the departure of embassies and the arrival of relics from the Buddhist countries, and Mantotte, to the north of Manaar, was the landing place of the innumerable expeditions which sailed from Chola and Pandya for the subjugation of Ceylon.

The Tamils have a tradition that, prior to the Christian era, Jaffna was colonised by Malabars, and that a Cholian prince assumed the government, A.D. 101,—a date which corresponds closely with the second Malabar invasion recorded in the *Mahawanso*. Thence they extended their authority over the adjacent country of the Wanny, as far south as Mantotte and Manaar, "fortified their frontiers and stationed wardens and watchers to protect themselves from invasion." [2] The successive bands of marauders arriving from the coast had thus on every occasion a base for operations, and a strong force of sympathisers to cover their landing; and from the inability of the Singhalese to offer an effectual resistance, those portions of the island were from a very early period practically abandoned to the Malabars, whose descendants at the present day form the great bulk of its population.

After an interval of twenty years, Wijayo Bahu III., A.D. 1235, collected as many Singhalese followers as enabled him to recover a portion of the kingdom, and establish himself in Maya, within which he built a capital at Jambudronha or Dambedenia, fifty miles to the north of the A.D. 1235.

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[1] *Rajavali*, 257.

[2] See a paper on the early History of Jaffna by S. CASIE CHITTY, *Journal of the Royal Asiat. Society of Ceylon*, 1847, p. 68.

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A.D. 1235. present Colombo. The Malabars still retained possession of Pihiti, and defended their frontier by a line of forts drawn across the island from Pollanarrua to Ooroototta on the western coast.[1]

A.D. 1266. Thirty years later Pandita Prakrama Bahu III., A.D. 1267, effected a further dislodgment of the enemy in the north; but Ceylon, which possessed

> "The fatal gift of beauty, that became
> A funeral dower of present woes and past,"

was destined never again to be free from the evils of foreign invasion; a new race of marauders from the Malayan peninsula were her next assailants[2]; and these were followed at no very long interval by a fresh expedition from the coast of India.[3]

Having learned by experience the exposure and insecurity of the successive capitals, which had been built by former sovereigns in the low lands, this king founded the city of Kandy, then called Siriwardanapura, amongst the mountains of Maya[4], to which he removed the sacred *dalada*, and the other treasures of the crown. But such precautions came too late: to use the simile of the native historian, they were "fencing the field whilst the oxen were within engaged in devouring the corn."[5] The power of the Malabars had become so firmly rooted, and had so irresistibly extended itself, that, one after another, each of the earlier capitals was abandoned to them, and the seat of government carried further towards the south. Pollanarrua had risen into importance in the eighth and ninth centuries, when Anarajapoora was found to be no longer tenable against the strangers. Dambedenia was next adopted, A.D. 1235, as a retreat from Pollanarrua; and this being
A.D. 1303. deemed insecure, was exchanged, A.D. 1303, for Yapahu in the Seven Corles. Here the Pandyan marauders

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[1] *Mahawanso*, ch. lxxx. lxxxii.; *Rajaratnacari*, pp. 94, 95; *Rajavali*, p. 258.

[2] *Rajavali*, pp. 256, 260. A second Malay landing is recorded in the reign of Prakrama III., A.D. 1267.

[3] *Mahawanso*, ch. lxxxii.

[4] *Rajaratnacari*, p. 104; *Mahawanso*, ch. lxxxiii.

[5] *Rajaratnacari*, p. 82.

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followed in the rear of the retreating sovereign[1], surprised the new capital, and carried off the dalada relic to the coast of India. After its recovery Yapahu was deserted, A.D. 1319. Kornegalle or Kurunaigalla, then called Hastisailapoora and Gampola[2], still further to the south and more deeply intrenched amongst the Kandyan mountains, were successively chosen for the royal residence, A.D. 1347. Thence the uneasy seat of government was carried to Paradenia, close by Kandy, and its latest migration, A.D. 1410, was to Jaya-wardana-pura, the modern Cotta, a few miles east of Colombo. A.D. 1319. A.D. 1347. A.D. 1410.

Such frequent removals are evidences of the alarm and despondency excited by the forays and encroachments of the Malabars, who from their stronghold at Jaffna exercised undisputed dominion over the northern coasts on both sides of the island, and, secure in the possession of the two ancient capitals, Anarajapoora and Pollanarrua, spread over the rich and productive plains of the north. To the present hour the population of the island retains the permanent traces of this alien occupation of the ancient kingdom of Pihiti. The language of the north of the island, from Chilaw on the west coast to Batticaloa on the east, is chiefly, and in the majority of localities exclusively, Tamil; whilst to the south of the Dedera-oya and the Mahawelli-ganga in the ancient divisions of Rohuna and Maya, the vernacular is uniformly Singhalese.

Occasionally, after long periods of inaction, collisions took place; or the Singhalese kings equipped expeditions against the north; but the contest was unequal; and in spite of casual successes, "the king of the Ceylonese Malabars," as he is styled in the *Rajavali*, held his court at Jaffnapatam, and collected tribute from both the high and

[1] A. D. 1303.

[2] Gampola or Gam-pala, *Ganga-siripura*, "the beautiful city near the river," is said in the *Rajaratnacari* to have been built by one of the brothers-in-law of Panduwaasa, B.C. 504.

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A.D. 1410. the low countries, whilst the south of the island was subdivided into a variety of petty kingdoms, the chiefs of which, at Yapahu, at Kandy, at Gampola, at Matura, Mahagam, Matelle, and other places [1], acknowledged the nominal supremacy of the sovereign at Cotta, with whom, however, they were necessarily involved in territorial quarrels, and in hostilities provoked by the withholding of tribute.

It was during this period that an event occurred, which is obscurely alluded to in some of the Singhalese chronicles, but is recorded with such minute details in several of the Chinese historical works, as to afford a reliable illustration of the condition of the island and its monarchy in the fifteenth century. Prior to that time the community of religion between Ceylon and China, and the eagerness of the latter country to extend its commerce, led to the establishment of an intercourse which has been elsewhere described [2]; missions were constantly despatched charged with an interchange of courtesies between their sovereigns; theologians and officers of state arrived in Ceylon empowered to collect information regarding the doctrines of Buddha; and envoys were sent in return bearing royal donations of relics and sacred books. The Singhalese monarchs, overawed by the magnitude of the imperial power, were induced to avow towards China a sense of dependency approaching to homage; and the gifts which they offered are all recorded in the Chinese annals as so many "payments of tribute." At length, in the year 1405 A.D. [3],

[1] *Rajavali*, p. 263; *Mahawanso*, ch. lxxxvii.

[2] See Part v. ch. iii.

[3] The narrative in the text is extracted from the *Ta-tsing-yi-tung*, a "Topographical Account of the Manchoo Empire," written in the seventeenth century, to a copy of which, in the British Museum, my attention was directed by the erudite Chinese scholar, Mr. Meadows, author of "*The Chinese and their Rebellions*." The story of this Chinese expedition to Ceylon will also be found in the *Se-yih-kê-foo-choo*, "A Description of Western Countries," A.D. 1450; the *Woo heo-pëcu*, "A Record of the Ming Dynasty," A.D. 1522, b. lviii. p. 3, and in the *Ming-she*, "A History of the Ming Dynasty," A.D. 1739, cccxxvi. p. 2. For a further account of this event see Part v. of this work, ch. iii.

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during the reign of the emperor Yung-lo[1] of the Ming-dynasty, a celebrated Chinese commander, Ching-Ho, having visited Ceylon as the bearer of incense and offerings, to be deposited at the shrine of Buddha, was waylaid, together with his followers, by the Singhalese king, Wijayo Bahu VI., and with difficulty effected an escape to his ships. To revenge this treacherous affront Ching-Ho was despatched a few years afterwards with a considerable fleet and a formidable military force, which the king (whom the Chinese historian calls A-lee-ko-nae-wih) prepared to resist; but by a vigorous effort Ho and his followers succeeded in seizing the capital, and bore off the sovereign, together with his family, as prisoners to China. He presented them to the emperor, who, out of compassion, ordered them to be sent back to their country on the condition that "the wisest of the family should be chosen king." "*Seay-pa-nea-na*"[2] was accordingly elected, and this choice being confirmed, he was sent to his native country, duly provided with a seal of investiture, as a vassal of the empire under the style of Sri Prakrama Bahu VI., —and from that period till the reign of Teen-shun, A. D. 1434—1448, Ceylon continued to pay an annual tribute to China.

A.D. 1410.

From the beginning of the 13th century to the extinction of the Singhalese dynasty in the 18th, the island cannot be said to have been ever entirely freed from the presence of the Malabars. Even when temporarily subdued, they remained with forced professions of loyalty; Damilo soldiers were taken into pay by the Singhalese sovereigns; the dewales of the Hindu worship were built in close contiguity to the wiharas of Buddhism, and by frequent intermarriages the royal line was almost as closely allied to the kings of Chola and Pandya as to the blood of the Suluwanse.[3]

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[1] The *Ming-she* calls the Emperor "Ching-tsoo."

[2] So called in the Chinese original.

[3] *Rajavali*, p. 261, 262. In A.D. 1187 on the death of Mahindo V., the second in succession from the great Prakrama, the crown devolved upon Kirti

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A.D. 1505. It was in this state of exhaustion, that the Singhalese were brought into contact with Europeans, during the reign of Dharma Prakrama IX., when the Portuguese, who had recently established themselves in India, appeared for the first time in Ceylon, A.D. 1505. The paramount sovereign was then living at Cotta; and the *Rajavali* records the event in the following terms:—"And now it came to pass that in the Christian year 1522 A.D., in the month of April, a ship from Portugal arrived at Colombo, and information was brought to the king, that there were in the harbour a race of very white and beautiful people, who wear boots and hats of iron, and never stop in one place. They eat a sort of white stone, and drink blood; and if they get a fish they give two or three *ridé* in gold for it; and besides, they have guns with a noise louder than thunder, and a ball shot from one of them, after traversing a league, will break a castle of marble."[1]

Before proceeding to recount the intercourse of the islanders with these civilised visitors, and the grave results which followed, it will be well to cast a glance over the condition of the people during the period which preceded, and to cull from the native historians such notices of their domestic and social position as occur in passages intended by the Singhalese annalists to chronicle only those events which influenced the national worship, or the exploits of those royal personages, who earned immortality by their protection of Buddhism.

Nissanga, who was summoned from Calinga on the Coromandel Coast. On the extinction of the recognised line of Suluwanse in 1706 A.D., a prince from Madura, who was merely a connection by marriage, succeeded to the throne. The King Raja Singha, who detained KNOX in captivity, A.D. 1640, was married to a Malabar princess. In fact, the four last kings of Ceylon, prior to its surrender to Great Britain, were pure Malabars, without a trace of Singhalese blood.

[1] *Rajavali*, UPHAM's version, p. 278.

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PART IV.

SCIENCES AND SOCIAL ARTS

OF

THE ANCIENT SINGHALESE.

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CHAPTER I.

POPULATION.—CASTE.—SLAVERY AND RAJA-KARIYA.

POPULATION.—In no single instance do the chronicles of Ceylon mention the precise amount of the population of the island, at any particular period; but there is a sufficiency of evidence, both historical and physical, to show that it must have been prodigious and dense, especially in the reigns of the more prosperous kings. Whatever limits to the increase of man artificial wants may interpose in a civilised state and in ordinary climates, are unknown in a tropical region, where clothing is an encumbrance, the smallest shelter a home, and sustenance supplied by the bounty of the soil, in almost spontaneous abundance. Under such propitious circumstances, in the midst of a profusion of fruit-bearing-trees, and in a country replenished by a teeming harvest, twice, at least, in each year, with the least possible application of labour; it may readily be conceived that the number of the people will be adjusted mainly, if not entirely, by the extent of arable land.

The emotion of the traveller of the present time, as day after day he traverses the northern portions of the island, and penetrates the deep forests of the interior, is one of unceasing astonishment at the inconceivable multitude of deserted tanks, the hollows of which are still to be traced; and the innumerable embankments, overgrown with timber, which indicate the sites of vast reservoirs that formerly fertilised districts now solitary and barren. Every such tank is the landmark of one village at least, and such are the dimensions of some of them that in propor-

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tion to their area, it is probable that hundreds of villages may have been supported by a single one of these great inland lakes.

The *Rajavali* relates that in the year 1301 A.D. King Prakrama III., on the eve of his death, reminded his sons, that having conquered the Malabars, he had united under one rule the three kingdoms of the island, Pihiti with 450,000 villages, Rohuna with 770,000, and Maya with 250,000.[1] A village in Ceylon, it must be observed, resembles a "town" in the phraseology of Scotland, where the smallest collection of houses, or even a single farmstead with its buildings is enough to justify the appellation. In the same manner, according to the sacred ordinances which regulate the conduct of the Buddhist priesthood, a "solitary house, if there be people, must be regarded as a village,"[2] and all beyond it is the forest.

The labour necessary to construct one of these gigantic works for irrigation is in itself an evidence of local density of population; but their multiplication by successive kings, and the constantly recurring record of district after district brought under cultivation in each successive reign[3], demonstrate the steady increase of inhabitants, and the multitude of husbandmen whose combined and sustained toil was indispensable to keep these prodigious structures in productive activity.

Even assuming that the figures employed by the author of the *Rajavali* partake of the exaggeration

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[1] *Rajavali*, p. 262. A century later in the reign of Prakrama-Kotta, A.D. 1410, the *Rajaratnacari* says, there then were 256,000 villages in the province of Matura, 495,000 in that of Jaffna, and 790,000 in Oovah.—P. 112.

[2] HARDY'S *Eastern Monachism*, ch. xiii. p. 133.

[3] The practice of recording the formation of tanks for irrigation by the sovereign is not confined to the chronicles of Ceylon. The construction of similar works on the continent of India has been commemorated in the same manner by the native historians. The memoirs of the Rajas of Orissa show the number of tanks made and wells dug in every reign.

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common to all oriental narratives, no one who has visited the regions now silent and deserted, once the homes of millions, can hesitate to believe that when the island was in the zenith of its prosperity, the population of Ceylon must of necessity have been at least ten times as great as it is at the present day.

The same train of thought leads to a clearer conception of the means by which this dense population was preserved, through so many centuries, in spite of frequent revolutions and often recurring invasions; as well as of the causes which led to its ultimate disappearance, when intestine decay had wasted the organisation on which the fabric of society rested.

Cultivation, as it existed in the north of Ceylon, was almost entirely dependent on the store of water preserved in each village tank; and it could only be carried on by the combined labour of the whole local community, applied in the first instance to collect and secure the requisite supply for irrigation, and afterwards to distribute it to the rice lands, which were tilled by the united exertions of the inhabitants, amongst whom the crop was divided in due proportions. So indispensable were concord and union in such operations, that injunctions for their maintenance were sometimes engraven on the rocks, as an imperishable exhortation to forbearance and harmony.[1]

Hence, in the recurring convulsions which overthrew successive dynasties, and transferred the crown to usurpers, with a facile rapidity, otherwise almost unintelligible, it is easy to comprehend that the mass of the people had the strongest possible motives for passive submission, and were constrained to acquiescence by an instinctive dread of the fatal effects of prolonged com-

[1] See the inscription on the rock of Mihintala, A.D. 262, TURNOUR'S *Epitome*, Appendix, p. 90; and a similar one on a rock at Pollanarrua, *Ibid.*, p. 92.

motion. If interrupted in their industry, by the dread of such events, they retired till the storm had blown over, and returned, after each temporary dispersion, to resume possession of the lands and their village tank.

The desolation which now reigns over the plains which the Singhalese formerly tilled, was precipitated by the reckless domination of the Malabars, in the fourteenth and following centuries. The destruction of reservoirs and tanks has been ascribed to defective construction, and to the absence of spill-waters, and other facilities for discharging the surplus-water, during the prevalence of excessive rains; but independently of the fact that vast numbers of these tanks, though utterly deserted, remain, in this respect, almost uninjured to the present day, we have the evidence of their own native historians, that for upwards of fifteen centuries, the reservoirs, when duly attended to, successfully defied all the dangers to be apprehended from inundation. Their destruction and abandonment are ascribable, not so much to any engineering defect, as to the disruption of the village communities, by whom they were so long maintained. The ruin of a reservoir, when neglected and permitted to fall into decay, was speedy and inevitable; and as the destruction of the village tank involved the flight of all dependent upon it, the water, once permitted to escape, carried pestilence and miasma over the plains they had previously covered with plenty. After such a calamity any partial return of the villagers, even where it was not prevented by the dread of malaria, would have been impracticable; for the obvious reason, that where the whole combined labour of the community was not more than sufficient to carry on the work of conservancy and cultivation, the diminished force of a few would have been utterly unavailing, either to effect the reparation of the watercourses, or to restore the system on which the culture of rice depends. Thus the process of decay, instead of a gradual decline as in

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other countries, became sudden and utter desolation in Ceylon.

From such traces as are perceptible in the story of the earliest immigrants, it is obvious that in their domestic habits and civil life they brought with them and perpetuated in Ceylon the same pursuits and traits which characterised the Aryan races that had colonised the valley of the Ganges. The Singhalese Chronicles abound, like the ancient Vedas, with allusions to agriculture and herds, to the breeding of cattle and the culture of grain. They speak of village communities and of their social organisation, as purely patriarchal. Women were treated with respect and deference; and as priestesses and queens they acquired a prominent place in the national esteem. Rich furniture was used in dwellings and costly textures for dress; but these were obtained from other nations, whose ships resorted to the island, whilst its inhabitants, averse to intercourse with foreigners, and ignorant of navigation, held the pursuits of the merchant in no esteem.

Caste.—Amongst the aboriginal inhabitants *caste* appears to have been unknown, although after the arrival of Wijayo and his followers the system in all its minute subdivisions, and slavery, both domestic and prædial, prevailed throughout the island. The Buddhists, as dissenters, who revolted against the arrogant pretensions of the Brahmans, embodied in their doctrines a protest against caste under any modification. But even after the conversion of the Singhalese to Buddhism, and their acceptance of the faith at the hands of Mahindo, caste as a national institution was found too obstinately established to be overthrown by the Buddhist priesthood; and reinforced, as its supporters were, by subsequent intercourse with the Malabars, it has been perpetuated to the present time, as a conventional and social, though no longer as a sacred institution. Practically, the Singhalese ignore three of the great classes,

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theoretically maintained by the Hindus; among them there are neither Brahmans, Vaisyas, nor Kshastryas; and at the head of the class which they retain, they place the *Goi-wanse* or *Vellalas*, nominally "tillers of the soil." In earlier times the institution seems to have been recognised in its entirety, and in the glowing description given in the *Mahawanso* of the planting of the great Bo-tree, "the sovereign the lord of chariots directed that it should be lifted by the four high caste tribes and by eight persons of each of the other castes."[1] In later times the higher ranks are seldom spoken of in the historical books but by specific titles, but frequent allusion is made to the Chandalas, the lowest of all, who were degraded to the office of scavengers and carriers of corpses.[2]

Slavery.—The existence of slavery is repeatedly referred to, and in the absence of any specific allusion to its origin in Ceylon, it must be presumed to have been borrowed from India. As the Sudras, according to the institutes of Menu, were by the laws of caste consigned to helpless bondage, so slavery in Ceylon was an attribute of race[3]; and those condemned to it were doomed to toil from their birth, with no requital other than the obligation on the part of their masters to maintain them in health, to succour them in sickness, and apportion their burdens to their strength.[4] And although the liberality of theoretical Buddhism threw open, even to the lowest caste, all the privileges of the priesthood, the

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[1] *Mahawanso*, ch. xix. p. 116.

[2] *Ibid.*, ch. x. p. 66. The Chandala in one of the Jatakas is represented as "one born in the open air, his parents not being possessed of a roof; and as he lies amongst the pots when his mother goes to cut fire-wood, he is suckled by the bitch along with her pups."—Hardy's *Buddhism*, ch. iii. p. 80.

[3] In later times, slavery was not confined to the low castes; insolvents could be made slaves by their creditors—the chief frequently buying the debt, and attaching the debtor to his followers. The children of freemen, by female slaves, followed the status of their mothers.

[4] Hardy's *Buddhism*, ch. x. p. 482.

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slave alone was repulsed, on the ground that his admission would deprive the owner of his services.[1]

Like other property, slaves could be possessed by the Buddhist monasteries, and inscriptions, still existing upon the rocks of Mihintala and Dambool, attest the capacity of the priests to receive them as gifts and to require that as slaves they should be exempted from taxation.

Unrelaxed in its assertion of abstract right, but mitigated in the forms of its practical enforcement, slavery endured in Ceylon till extinguished by the fiat of the British Government in 1845.[2] In the northern and Tamil districts of the island, its characteristics differed considerably from its aspect in the south and amongst the Kandyan mountains. In the former, the slaves were employed in the labours of the field and rewarded with a small proportion of the produce; but amongst the pure Singhalese, slavery was domestic rather than prædial, and those born to its duties were employed less as the servants, than as the suite of the Kandyan chiefs. Slaves swelled the train of their retainers on all occasions of display, and had certain domestic duties assigned to them, amongst which was the carrying of fire-wood, and the laying out of the corpse after death. The strongest proof of the general mildness of their treatment in all parts of the island, is derived from the fact, that when in 1845, Lord Stanley, now the Earl of Derby, directed the final abolition of the system, slavery was extinguished in Ceylon without a claim for compensation on the part of the proprietors.

Compulsory Labour.—Another institution, to the influence and operation of which the country was indebted for the construction of the works which diffused plenty throughout every region, was the system of Raja-kariya,

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[1] HARDY's *Eastern Monachism*, ch. iv. p. 18.

[2] An account of slavery in Ceylon, and the proceedings for its suppression, will be found in PRIDHAM's *Ceylon*, vol. i. p. 223.

by which the king had a right to employ, for public purposes, the compulsory labour of the inhabitants. To what extent this was capable of exaction, or under what safeguards it was enforced in early times, does not appear from the historical books. But on all occasions when tanks were to be formed, or canals cut for irrigation, the *Mahawanso* alludes,—almost in words of course,—to the application of Raja-kariya for their construction[1], the people being summoned to the task by beat of drum.[2]

The only mention of the system which attracts particular attention, is the honour awarded to the most pious of the kings, who, whilst maintaining Raja-kariya as an institution, nevertheless stigmatised it as "oppression" when applied to non-productive objects; and on the occasion of erecting one of the most stupendous of the monuments dedicated to the national faith, felt that the merit of the act would be neutralised, were it to be accomplished by "unrequited" labour.[3]

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[1] The inscription engraven on the rock at Mihintala, amongst other regulations for enforcing the observance by the temple tenants of the conditions on which their lands were held, declares that "if a fault be committed by any of the cultivators, the adequate fine shall be assessed according to usage; or in lieu thereof, the delinquent shall be directed *to work at the lake* in making an excavation not exceeding sixteen cubits in circumference and one cubit deep."—TURNOUR'S *Epitome, &c.*, Appendix, p. 87.

[2] *Mahawanso*, ch. xxv. p. 149.

[3] *Ibid.*, ch. xxvii. pp. 163, 165. King Tissa, A.D. 201, in imitation of Dutugaimunu, caused the restorations of monuments at the capital "*to be made with paid labour*."—*Ibid.*, ch. xxxvi. p. 226. See *ante* Vol. I. Pt. III. ch. v. p. 357.

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CHAP. II.

AGRICULTURE.—IRRIGATION.—CATTLE AND CROPS.

AGRICULTURE.—Prior to the arrival of the Bengalis, and even for some centuries after the conquest of Wijayo, before the knowledge of agriculture had extended throughout the island, the inhabitants appear to have subsisted to a great extent by the chase.[1] Hunting the elk and the boar was one of the amusements of the early princes; the "Royal Huntsmen" had a range of buildings erected for their residence at Anarajapoora, B. C. 504[2], and the laws of the chase generously forbade to shoot the deer except in flight.[3] Dogs were trained to assist in the sport[4] and the oppressed aborigines, driven by their conquerors to the forests of Rohuna and Maya, are the subjects of frequent commendation in the pages of the *Mahawanso*, from their singular ability in the use of the bow.[5]

Before the arrival of Wijayo, B.C. 543, agriculture was unknown in Ceylon, and grain, if grown at all, was not systematically cultivated. The Yakkhos, the aborigines, subsisted, as the Veddahs, their lineal descendants, live at the present day, on fruits, honey, and the products of the chase. Rice was distributed by Kuweni to the followers of Wijayo, but it was "rice procured from the wrecked

[1] *Mahawanso*, ch. x. p. 59; ch. xiv. p. 78; ch. xxiii. p. 142. The hunting of the hare is mentioned 161 B.C. *Mahawanso*, ch. xxiii. p. 141.

[2] *Ibid.*, ch. x. p. 66.

[3] *Ibid.*, ch. xiv. p. 78. King Devenipiatissa, when descrying the elk which led him to the mountain where Mahindo was seated, exclaimed, "It is not fair to shoot him standing!" he twanged his bowstring and followed him as he fled. See *ante*, p. 341, n.

[4] *Ibid.*, ch. xxviii. p. 166.

[5] *Ibid.*, ch. xxxiii. pp. 202, 204, &c.

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ships of mariners."[1] And two centuries later, so scanty was the production of native grain, that Asoca, amongst the presents which he sent to his ally Devenipiatissa, included "one hundred and sixty loads of hill paddi from Bengal."[2]

A Singhalese narrative of the "Planting of the Bo-tree," an English version of which will be found amongst the translations prepared for Sir Alexander Johnston, mentions the fact, that rice was still imported into Ceylon from the Coromandel coast[3] in the second century before Christ.

Irrigation.—It was to the Hindu kings who succeeded Wijayo, that Ceylon was indebted for the earliest knowledge of agriculture, for the construction of reservoirs, and the practice of irrigation for the cultivation of rice.[4]

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[1] *Mahawanso*, ch. vii. p. 49.

[2] *Ibid.*, ch. xi. p. 70.

[3] UPHAM, *Sacred Books of Ceylon*, vol. iii. p. 231.

[4] A very able report on irrigation in some of the districts of Ceylon has been recently drawn up by Mr. BAILEY, of the Ceylon Civil Service; but the author has been led into an error in supposing that "it cannot be to India that we must look for the origin of tanks and canals in Ceylon," and that the knowledge of their construction was derived through "the Arabian and Persian merchants who traded between Egypt and Ceylon." Mr. Bailey rests this conclusion on the assertion that the first Indian canal of which we have any record dates no farther back than the middle of the fourteenth century. There was nothing in common between the shallow canals for distributing the periodical inundation of the Nile over the level lands of Egypt (a country in which rice was little known), and the gigantic embankments by which hills were so connected in Ceylon as to convert the valleys between them into inland lakes; and there was no similarity to render the excavation of the one a model and precedent for the construction of the other. Probably the lake Mœris is what dwells in the mind of those who ascribe proficiency in irrigation to the ancient Egyptians; but although Herodotus asserts it to have been an excavation, χειροποίητός και ὀρυκτή (lib. ii. 149), geologic investigation has shown that Mœris is a natural lake created by the local depression of that portion of the Arsinoite nome. Neither Strabo nor Pliny, who believed it to be artificial, ascribed its origin to anything connected with irrigation, for which, in fact, its level would render it unsuitable. Nature had done so much for irrigation in Egypt, that art was forestalled; and even had it been otherwise, and had the natives of that country been adepts in the science, or capable of teaching it, the least qualified imparters of engineering knowledge would have been the Arab and Persian mariners, whose lives were spent in coasting the shores of the Indian Ocean. It is true that in Arabia itself, at a very early period, there is the tradition of the great artificial lake of Aram, in Yemen, about the time of Alexander the Great (SALE's *Koran*, Introd. p. 7); and evidence still more authentic shows that the practice of artificial irrigation was one of the earliest oc-

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The first tank in Ceylon was formed by the successor of Wijayo, B.C. 504, and their subsequent extension to an almost incredible number is ascribable to the influence of the Buddhist religion, which, abhorring

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cupations of the human race. The Scriptures, in enumerating the descendants of Shem, state that "unto Eber were born two sons, and the name of one was Peleg, for in his days the earth was divided." (*Genesis*, ch. x. ver. 25.) In this passage, according to CYRIL C. GRAHAM, the term *Peleg* has a profounder meaning, and the sentence should have been translated —"*for in his days the earth was cut into canals.*" (*Cambridge Essays*, 1858.)

But historical testimony exists which removes all obscurity from the inquiry as to who were the instructors of the Singhalese. The most ancient books of the Hindus show that the practice of canal-making was understood in India at as early a period as in Egypt. Canals are mentioned in the *Ramayana*, the story of which belongs to the dimmest antiquity; and when Baratha, the half-brother of Rama, was about to search for him in the Dekkan, his train is described as including "labourers, with carts, bridge-builders, carpenters, and diggers of canals." (*Ramayana*, CARY's Trans., vol. iii. p. 228.) The *Mahawanso* removes all doubt as to the person by whom the Singhalese were instructed in forming works for irrigation, by naming the Brahman engineer contemporary with the construction of the earliest tanks in the fourth century before the Christian era. (*Mahawanso*, ch. x.) Somewhat later, B.C. 262, the inscription on the rock at Mihintala ascribes to the Malabars the system of managing the water for the rice lands, and directs that "according to the supply of water in the lake, the same shall be distributed to the lands of the wihara *in the manner formerly regulated by the Tamils.*" (*Notes to* TURNOUR's *Epitome*, p. 90.) To be convinced of the Tamil origin of the tank system which subsists to the present day in Ceylon, it is only necessary to see the tanks of the Southern Dekkan. The innumerable excavated reservoirs or *colams* of Ceylon will be found to correspond with the *culams* of Mysore; and the vast *erays* formed by drawing a bund to intercept the water flowing between two elevated ridges, exhibit the model which has been followed at Pathavie, Kandelai, Menery, and all the huge constructions of Ceylon. But whoever may have been the original instructors of the Singhalese in the formation of tanks, there seems every reason to believe that from their own subsequent experience, and the prodigious extent to which they occupied themselves in the formation of works of this kind, they attained a facility unsurpassed by the people of any other country. It is a curious circumstance in connection with this inquiry, that in the eighth century after Christ, the King of Kashmir despatched messengers to Ceylon to bring back workmen, whom he employed in constructing an artificial lake. (*Raja-Tarangini*, Book iv. sl. 505.) If it were necessary to search beyond India for the origin of cultivation in Ceylon, the Singhalese, instead of borrowing a system from Egypt, might more naturally have imitated the ingenious devices of their own co-religionists in China, where the system of irrigation as pursued in the military colonies of that country has been a theme of admiration in every age of their history. (See *Journal Asiatique*, 1850, vol. lvi. pp. 341, 346.) And as these colonies were planted not only in the centre of the empire, but on its north-west extremities towards Kaschgar and the north-east of India, where the new settlers occupied themselves in draining marshes and leading streams to water their arable lands, the probabilities are that their system may have been known and copied by the people of Hindustan.

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the destruction of animal life, taught its multitudinous votaries to subsist exclusively upon vegetable food. Hence the planting of gardens, the diffusion of fruit-trees and leguminous vegetables[1], the sowing of dry grain[2], the formation of reservoirs and canals, and the reclamation of land "in situations favourable for irrigation."

It is impossible to over-estimate the importance of this system of water cultivation, in a country like the north of Ceylon, subject to periodical droughts. From physical and geological causes, the mode of cultivation in that section of the island differs essentially from that practised in the southern division; and whilst in the latter the frequency of the rains and abundance of rivers afford a copious supply of water, the rest of the country is mainly dependent upon artificial irrigation, and on the quantity of rain collected in tanks; or of water diverted from streams and directed into reservoirs.

As has been elsewhere[3] explained, the mountain ranges which tower along the south-western coast, and extend far towards the eastern, serve in both monsoons to intercept the trade winds and condense the vapours with which they are charged, thus ensuring to those regions a plentiful supply of rain. Hence the harvests in those portions of the island are regulated by the two monsoons, the *yalla* in May and the *maha* in November; and seed-time is adjusted so as to take advantage of the copious showers which fall at those periods.

But in the northern portions of Ceylon, owing to the absence of mountains, this natural resource cannot be relied on. The winds in both monsoons traverse the island without parting with a sufficiency of moisture;

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[1] Beans, designated by the term of *Masi* in the *Mahawanso*, were grown in the second century before Christ, ch. xxiii. p. 140.

[2] The "cultivation of a crop of hill rice" is mentioned in the *Mahawanso*, B.C. 77, ch. xxxiv. p. 208.

[3] See Vol. I. Part I. ch. ii. p. 67.

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droughts are of frequent occurrence and of long continuance; and vegetation in the low and scarcely undulated plains is mainly dependent on dews and whatever damp is distributed by the steady sea-breeze. In some places the sandy soil rests upon beds of madrepore and coral rock, through which the scanty rain percolates too quickly to refresh the soil; and the husbandman is entirely dependent upon wells and village tanks for the means of irrigation.

In a region exposed to such vicissitudes the risk would have been imminent and incessant, had the population been obliged to rely on supplies of dry grain alone, the growth of which must necessarily have been precarious, owing to the possible failure or deficiency of the rains. Hence frequent famines would have been inevitable in those seasons of prolonged dryness and scorching heat, when "the sky becomes as brass and the earth as iron."

What an unspeakable blessing that against such calamities a security should have been found by the introduction of a grain calculated to germinate under water; and that a perennial supply of the latter, not only adequate for all ordinary purposes, but sufficient to guard against extraordinary emergencies of the seasons, should have been provided by the ingenuity of the people, aided by the bounteous care of their sovereigns. It is no matter of surprise that the kings who devoted their treasures and their personal energies to the formation of tanks and canals have entitled their memory to traditional veneration, as benefactors of their race and country. In striking contrast, it is the pithy remark of the author of the *Rajavali*, mourning over the extinction of the Great Dynasty and the decline of the country, that "*because the fertility of the land was decreased* the kings who followed were no longer of such consequence as those who went before."[1]

[1] *Rajavali*, p. 238.

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Simultaneously with the construction of works for the advancement of agriculture, the patriarchal village system, copied from that which existed from the earliest ages in India[1], was established in the newly settled districts; and each hamlet, with its governing "headman," its artisans, its barber, its astrologer and washerman, was taught to conduct its own affairs by its village council; to repair its tanks and watercourses, and to collect two harvests in each year by the combined labour of the whole village community.

Between the agricultural system of the mountainous districts and that of the lowlands, there was at all times the same difference which still distinguishes the tank cultivation of Neuera-kalawa and the Wanny from the hanging rice lands of the Kandyan hills. In the latter, reservoirs are comparatively rare, as the natives rely on the certainty of the rains, which seldom fail at their due season in those lofty regions. Streams are conducted by means of channels ingeniously carried round the spurs of the hills and along the face of acclivities, so as to fertilise the fields below, which in the technical phrase of the Kandyans are "*assoedamised*" for the purpose; that is, formed into terraces, each protected by a shallow ledge over which the superfluous water trickles, from the highest level into that immediately below it; thus descending through all in succession till it escapes in the depths of the valley.

For the tillage of the lands with which the temples were so largely endowed in all quarters of the island, the sacred communities had assigned to them certain villages, a portion of whose labour was the property of the wihara[2]: slaves were also appropriated to them, and an instance is mentioned in the fifth century[3], of the inhabitants of a low-caste village having been bestowed on a monastery by the king Aggrabodhi, "in order

[1] *Mahawanso*, ch. x. p. 67.
[2] *Ibid.*, ch. xxxvii. p. 247.
[3] Rock inscriptions at Mihintala and at Dambool.

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that the priests might derive their service as slaves."[1] Sharing in a prerogative of royalty, some of the temples had, moreover, a right to the compulsory labour of the community; and in one of the inscriptions carved on the rock at Mihintala, the "Raja-kariya writer" is enumerated in the list of temple officers.[2] The temple lands were occasionally let to tenants whose rent was paid either in "land-fees," or in kind.[3]

Farm-stock.—The only farm-stock which appears to have been kept for tillage purposes, were buffaloes, which, then as now, were used in treading the soft mud of the irrigated rice-fields, preparatory to casting in the seed. Cows are alluded to in the *Mahawanso*, but never in connection with labour; and although butter is spoken of, it is only that of the buffalo.[4]

Gardens.—Probably the earliest enclosures attempted in a state of incipient civilisation, were gardens for the exclusion of wild animals from fruit trees and vegetables, when these were first cultivated for the use of man; and to the present day, the frequent occurrence of the termination "*watte*" in the names of places on the map of Ceylon, is in itself an indication of the importance attached to them by the villagers. The term "garden," however, conveys to an European but an imperfect idea of the character and style of these places; which in Ceylon are so similar to the native gardens in the south of India, as to suggest a community of origin. Their leading features are lines of the graceful areca palms, groves of oranges, limes, jak-trees, and bread fruit; and irregular clumps of palmyras and coconuts. Beneath these, there is a minor growth, sometimes of cinnamon or coffee bushes; and always a wilderness of plantains, guavas and papaws; a few of the commoner flowers; plots of brinjals (egg plants) and other esculents;

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[1] *Mahawanso,* ch. xlii. TURNOUR, MS. translation.

[2] TURNOUR'S *Epitome, Appendix,* p. 88.

[3] *Ibid.,* pp. 86, 87.

[4] *Mahawanso,* ch. xxvii. p. 163.

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and the stems of the standard trees are festooned with climbers, pepper vines, tomatas and betel.

The Coco-nut Palm. — It is curious and suggestive as regards the coco-nut, which now enters so largely into the domestic economy of the Singhalese, that although it is sometimes spoken of in the *Mahawanso* (but by no means so often as the palmyra), no allusion is ever made to it as an article of diet, or an element in the preparation of food, nor is it mentioned before the reign of Prakrama I., A. D. 1153[1], in the list of those fruit-trees, the planting of which throughout the island is repeatedly recorded, as amongst the munificent acts of the Singhalese kings.

As the other species of the same genus of palms are confined to the New World[2], a doubt has been raised whether the coco-nut be indigenous in India, or an importation. If the latter, the first plant must have been introduced anterior to the historic age; and whatever the period at which the tree may have been first cultivated, a time is indicated when it was practically unknown in Ceylon by the fact, that a statue, without date or inscription, is carved in high relief in a niche hollowed out of a rock to the east of Galle, which tradition says is the monument to the Kustia Raja, an Indian prince, whose claim to remembrance is, that he *first* taught the Singhalese the use of the coco-nut.[3]

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[1] *Mahawanso*, ch. lxxii.

[2] BROWN's *Notes* to TUCKEY's *Expedition to the Congo*, p. 456.

[3] The earliest mention of the coco-nut in Ceylon occurs in the *Mahawanso*, which refers to it as known at Rohuna to the south, B. C. 161 (ch. xxv. p. 140). "The milk of the small red coco-nut" is stated to have been used by Dutugaimunu in preparing cement for building the Ruanwellé dagoba (*Mah.* ch. xxx. p. 169). The south-west of the island, and especially the *margin of the sea*, is still the locality in which the tree is found in greatest abundance in Ceylon. Hither, if originally self-sown, it must have been floated and flung ashore by the waves; and as the north-east coast, though washed by a powerful current, is almost altogether destitute of these palms, it is obvious that the coco-nut, if carried by sea from some other shore, must have been brought during the south-west monsoon from the coast near Cape Comorin. ÆLIAN notices as one of the leading peculiarities in the appearance of the sea coast of Ceylon, that the palm trees

The mango, the jambo, and several other fruits are particularised, but the historical books make no mention either of the pine-apple or the plantain, which appear to have been of comparatively recent introduction. Pulse is alluded to at an early date under the generic designation of "Masá." [1]

Rice and Curry.—Rice in various forms is always spoken of as the food, alike of the sovereign, the priests, and the people; rice prepared plainly, conjee (the water in which rice is boiled), "rice mixed with sugar and honey, and rice dressed with clarified butter." [2] Chillies are now and then mentioned as an additional condiment.[3] The *Rajavali* speaks of curry in the second century before Christ[4], and the *Mahawanso* in the fifth century after.[5]

Although the taking of life is sternly forbidden in the ethical code of Buddha, and the most prominent of the

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(by which, as the south of the island was the place of resort, he most probably means the coco-nut palms) grew in regular quincunxes, as if planted by skilful hands in a well ordered garden. "Ἡ νῆσος, ἡν καλοῦσι Ταπροβάνην ἔχει φοινικῶνας μὲν θαυμαστῶς πεφυτευμένους εἴς στοιχον, ὥσπερ σὺν ἐν τοῖς ἀβροις των παραδείσων οἱ τούτων μελεδωνοί φυτεύουσι τὰ δένδρα τὰ σκιαδηφόρα."—Lib. xvi. ch. 18. The comparative silence of the *Mahawanso* in relation to the coco-nut may probably be referable to the fact that its author resided and wrote in the interior of the island; over which, unlike the light seeds of other plants, its ponderous nuts could not have been distributed accidentally, where down to the present time it has been but partially introduced, and nowhere in any considerable number. Its presence throughout Ceylon is always indicative of the vicinity of man, and at a distance from the shore it appears in those places only where it has been planted by his care. The Singhalese believe that the coco-nut will not flourish "unless you walk under it and talk under it:" but its proximity to human habitations is possibly explained by the consideration that if exposed in the forest, it would be liable, when young, to be forced down by the elephants, who delight in its delicate leaves.—See Davy's *Angler in the Lake Districts*, p. 245.

[1] *Mahawanso*, ch. xxiii. p. 140.

[2] *Ibid.*, ch. xxxii. p. 196.

[3] *Ibid.*, ch. xxv. p. 158; ch. xxvi. p. 160.

[4] *Rajavali*, pp. 196, 200, 202.

[5] *Mahawanso*, Turnour's MS. translation, ch. xxxix.

Knox says that curry is a Portuguese word, *carré* (*Relation*, *&c.*, part i. ch. iv. p. 12), but this is a misapprehension. Professor H. H. Wilson, in a private letter to me, says, "In Hindustan we are accustomed to consider 'curry' to be derived from *tarkari*, a general term for esculent vegetables, but it is probably the English version of the Kanara and Malayalam *kadi*; pronounced with a hard *r*, 'kari' or 'kuri,' which means sour milk with rice boiled, which was originally used for such compounds as curry at the present day. The Karnata *majkke-kari* is a dish of rice, sour milk, spices, red pepper, &c. &c."

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obligations undertaken by the priesthood is directed to its preservation even in the instances of insects and animalculæ, casuistry succeeded so far as to fix the crime on the slayer, and to exonerate the individual who merely partook of the flesh.[1] Even the inmates of the wiharas and monasteries discovered devices for the saving of conscience, and curried rice was not rejected in consequence of the animal ingredients incorporated with it. The mass of the population were nevertheless vegetarians, and so little value did they place on animal food, that according to the accounts furnished to EDRISI by the Arabian seamen returning from Ceylon, "a sheep sufficient to regale an assembly was to be bought there for half a drachm."[2]

Betel.—In connection with a diet so largely composed of vegetable food, arose the custom, which to the present day is universal in Ceylon,—of chewing the leaves of the betel vine, accompanied with lime and the sliced nut of the areca palm.[3] The betel (*piper betel*), which is now universally cultivated for this purpose, is presumed to have been introduced from some tropical island, as it has nowhere been found indigenous in continental India.[4] In Ceylon, its use is mentioned as early as the fifth century before Christ, when "betel leaves" formed the present sent by a princess to her lover.[5] In a conflict of Dutugaimunu with the Malabars, B.C. 161, the enemy seeing on his lips the red stain of the betel,

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[1] HARDY's *Eastern Monachism*, ch. iv. p. 24; ch. ix. p. 92; ch. xvi. p. 158. HARDY's *Buddhism*, ch. vii. p. 327.

[2] EDRISI, *Géographie, &c.*, tom. i. p. 73.

[3] For an account of the medicinal influence of betel chewing, see Part I. c. iii. § ii. p. 112.

[4] ROYLE's *Essay on the Antiquity of Hindoo Medicine*, p. 85.

[5] B.C. 504. *Mahawanso*, ch. ix. p. 57. Dutugaimunu, when building the Ruanwellé dagoba, provided for the labourers amongst other articles "the five condiments used in mastication." This probably refers to the chewing of betel and its accompaniments (*Mahawanso*, ch. xxx. p. 175). A story is told of the wife of a Singhalese minister, about A.D. 56, who to warn him of a conspiracy, sent him his "betel, &c., for mastication, omitting the chunam," hoping that coming in search of it, he might escape his "impending fate."—*Mahawanso*, ch. xxxv. p. 219.

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mistook it for blood, and spread the false cry that the king had been slain.[1]

Intoxicating liquors are of sufficient antiquity to be denounced in the moral system of Buddhism. The use of toddy and drinks obtained from the fermentation of "bread and flour" is condemned in the laity, and strictly prohibited to the priesthood[2]; but the Arabian geographers mention that in the twelfth century, wine, in defiance of the prohibition, was imported from Persia, and drunk by the Singhalese after being flavoured with cardamoms.[3]

[1] *Rajavali*, p. 221.

[2] HARDY'S *Buddhism, &c.*, ch. x. p. 474.

[3] EDRISI, *Géographie, &c.*, Trad. JAUBERT, tom. i. p. 73.

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CHAP. III.

EARLY COMMERCE, SHIPPING, AND PRODUCTIONS.

TRADE. — At a very early period the mass of the people of Ceylon were essentially agricultural, and the proportion of the population addicted to other pursuits consisted of the small number of handicraftsmen required in a community amongst whom civilisation and refinement were so slightly developed, that the bulk of the inhabitants may be said to have had few wants beyond the daily provision of food.

Upon trade the natives appear to have looked at all times with indifference. Other nations, both of the east and west of Ceylon, made the island their halting-place and emporium; the Chinese brought thither the wares destined for the countries beyond the Euphrates, and the Arabians and Persians met them with their products in exchange; but the Singhalese appear to have been uninterested spectators of this busy traffic, in which they can hardly be said to have taken any share. The inhabitants of the opposite coast of India, aware of the natural wealth of Ceylon, participated largely in its development, and the Tamils, who eagerly engaged in the pearl fishery, gave to the gulf of Manaar the name of Salabham, "the sea of gain." [1]

Native Shipping. — The only mention made of native ships in the sacred writings of the Singhalese,

[1] The Tamils gave the same name to Chilaw, which was the nearest town to the pearl fishery (and which Ibn Batuta calls *Salawat*); and eventually they called the whole island *Salabham*.

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is in connection with missions, whether for the promotion of Buddhism, or for the negotiation of marriages and alliances with the princes of India.[1] The building of dhoneys is adverted to as early as the first century, but they were only intended by a devout king to be stationed along the shores of the island, covered by day with white cloths, and by night illuminated with lamps, in order that from them priests, as the royal almoners, might distribute gifts and donations of food.[2]

The genius of the people seems to have never inclined them to a sea-faring life, and the earliest notice which occurs of ships for the defence of the coast, is in connection with the Malabars who were taken into the royal service from their skill in naval affairs.[3] A national marine was afterwards established for this purpose, A.D. 495, by the King Mogallana.[4] In the *Suy shoo*, a Chinese history of the Suy dynasty, it is stated that in A.D. 607, the King of Ceylon "sent the Brahman Kew-mo-lŏ with thirty vessels, to meet the approaching ships which conveyed an embassy from China."[5] And in the twelfth century, when Prakrama I. was about to enter on his foreign expeditions, "several hundreds of vessels were equipped for that service within five months."[6]

It is remarkable that the same apathy, if not antipathy, to navigation still prevails amongst the inhabitants of an island, the long sea-borde of which affords facilities for cultivating a maritime taste did any such exist. But whilst the natives of Hindustan fit out sea-going vessels, and take service as sailors for distant voyages, the Singhalese, though most expert as fishers and boatmen, never embark in foreign vessels, and no in-

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[1] TURNOUR's *Epitome*, App. p. 73.

[2] By King Maha Dailiya, A.D. 8. *Mahawanso*, ch. xxxiv. p. 211; *Rajavali*, p. 228; *Rajaratnacari*, p. 52.

[3] B.C. 247. *Mahawanso*, ch. xxi. p. 127.

[4] *Mahawanso*, ch. xl. TURNOUR's MS. Transl.

[5] *Suy-shoo*, b. lxxxi. p. 3.

[6] TURNOUR's *Epitome*, &c., App. p. 73.

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stance exists of a native ship, owned, built, or manned by Singhalese.

The boats which are in use at the present day, and which differ materially in build at different parts of the island, appear to have been all copied from models supplied by other countries. In the south the curious canoes, which attract the eye of the stranger arriving at Point de Galle by their balance-log and outrigger, were borrowed from the islanders of the Eastern Archipelago; the more substantial canoe called a *ballam*, which is found in the estuaries and shallow lakes around the northern shore, is imitated from one of similar form on the Malabar coast; and the catamaran is common to Ceylon and Coromandel. The awkward dhoneys, built at Jaffna, and manned by Tamils, are imitated from those at Madras; while the Singhalese dhoney, south of Colombo, is but an enlargement of the Galle canoe with its outrigger, so clumsily constructed that the gunwale is frequently topped by a line of wicker-work smeared with clay, to protect the deck from the wash of the sea.[1]

One peculiarity in the mode of constructing the native shipping of Ceylon existed in the remotest times, and is retained to the present day. The practice is closely connected with one of the most imaginative incidents in the mediæval romances of the East. Their boats and canoes, like those of the Arabs and other early navigators who crept along the shores of India, are put together without the use of iron nails[2], the planks being secured by wooden bolts, and stitched together with cords spun from the fibre of the coco-

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[1] The gunwale of the boat of Ulysses was raised by hurdles of osiers to keep off the waves.

Φράξε δέ μιν ῥίπεσσι διαμπερὲς οἰσυΐνῃσι
Κύματος εἶλαρ ἔμεν' πολλὴν δ' ἐπε-
χεύατο ὕλην. *Od.* v. 256.

[2] DELAURIER, Études sur la "*Relation des voyages faits par les Arabes et les Persans dans l'Inde.*"—*Journ. Asiat.* tom. xlix. p. 137. See also MALTE BRUN, *Hist. de Géogr.* tom. i. p. 409, with the references to the Periplus Mar. Erythr., Strabo, Procopius, &c. GIBBON, *Decl. and Fall*, vol. v. ch. xl.

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nut.[1] PALLADIUS, a Greek of the lower empire, to whom is ascribed an account of the nations of India, written in the fifth century[2], adverts to this peculiarity of construction, and connects it with the phenomenon which forms so striking an incident in one of the tales in the *Arabian Nights' Entertainments.* In the story of the "Three Royal Mendicants," the "Third Calender" as he is called in the old translation, relates to the ladies of Bagdad, in whose house he is entertained, how he and his companions lost their course, when sailing in the Indian Ocean, and found themselves in the vicinity of "the mountain of loadstone towards which the current carried them with violence, and when the ships approached it they fell asunder, and the nails and everything that was of iron flew from them towards the loadstone."

The learned commentator, LANE, says that several Arab writers describe this mountain of loadstone, and amongst others he instances El Caswini, who lived in the latter half of the thirteenth century.[3] EDRISI, the Arab geographer, likewise alludes to it; but the invention belongs to an earlier age, and Palladius, in describing Ceylon, says that the magnetic rock is in the adjacent islands called Maniolæ (Maldives?), and that ships coming within the sphere of its influence are irresistibly drawn towards it, and lose all power of progress except in its direction. Hence it is essential, he adds, that vessels sailing for Ceylon *should be fastened with wooden instead of iron bolts.*[4]

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[1] Boats thus sewn together existed at an early period on the coast of Arabia as well as of Ceylon. Odoric of Friuli saw them at Ormus in the fourteenth century (*Hakluyt*, vol. ii. p. 35); and the construction of ships without iron was not peculiar to the Indian seas, as Homer mentions that the boat built by Ulysses was put together with wooden pegs, γόμφοισιν, instead of bolts.—*Odys.* v. 249.

[2] The tract alluded to is usually known as the treatise *de Moribus Brachmanorum,* and ascribed to St. Ambrose. For an account of it see Vol. I. P. v. ch. i. p. 538.

[3] LANE'S *Arabian Nights,* vol. i. ch. iii. n. 72, p. 242.

[4] "Ἐστι δὲ ἰδικῶς τὰ διαπερῶντα πλοῖα εἰς ἐκείνην τὴν μεγάλην νῆσον ἄνευ σιδήρου ἐπιουρίοις ξυλίνοις κατασκευασμένα."—PALLADIUS, in *Pseudo-Callisthenes,* lib. iii. c. vii. But the fable of the loadstone mountain is

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Another peculiarity of the native craft on the west coast of Ceylon is their construction with a prow at each extremity, a characteristic which belongs also to the Massoula boats of Madras, as well as to others on the south of India. It is a curious illustration of the abiding nature of local usages when originating in necessities and utility, that STRABO, in describing the boats in which the traffic was carried on between Taprobane and the continent, says they were "built with prows at each end, but without holds or keels."[1]

In connection with foreign trade the *Mahawanso* contains repeated allusions to ships wrecked upon the coast of Ceylon[2], and amongst the remarkable events which signalised the season, already rendered memorable by the birth of Dutugaimunu, B.C. 204, was the "arrival on the same day of seven ships laden with golden utensils and other goods"[3] and as these were brought by order of the king to Mahagam, then the capital of Rohuna, the incident is probably referable to the foreign trade which was then carried on in the south of the island[4] by the Chinese

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older than either the Arabian sailors or the Greeks of the lower empire. Aristotle speaks of a magnetic mountain on the coast of India, and Pliny repeats the story, adding that "si sint clavi in calciamentis, vestigia avelli in altero non posse in altero sisti."—Lib. ii. c. 98, lib. xxxvi. c. 25. Ptolemy recounts a similar fable in his geography. Klaproth, in his *Lettre sur la Boussole*, says that this romantic belief was first communicated to the West from China. "Les anciens auteurs Chinois parlent aussi de montagnes magnetiques de la mer méridionale sur les côtes de Tonquin et de la Cochin Chine; et disent que si les vaisseaux étrangers qui sont garnis de plaques de fer s'en approchent ils y sont arrêtés et aucun d'eux ne peut passer par ces endroits."—KLAPROTH, Lett. v. p. 117, quoted by SANTAREM, *Essai sur l'Hist. de Cosmogr.*, vol. i. p. 182.

[1] "*Κατεσκευασμένας δὲ αμφοτέρωθεν ἐγκοιλίων μητρῶν χωρίς.*"—Lib. xv. c. i. s. 14. Pliny, who makes the same statement, says the Singhalese adopted this model to avoid the necessity of tacking in the narrow and shallow channels, between Ceylon and the mainland of India (lib. vi. c. 24).

[2] B.C. 543—*Mahawanso*, ch. vii. p. 49; B.C. 306.—*Ibid.* ch. xi. p. 68, &c.

[3] *Mahawanso*, ch. xxii. p. 135.

[4] The first direct intimation of trading carried on by native Singhalese, along the coast of Ceylon, occurs in the *Rajavali*, but not till the year A.D. 1410,—the king, who had made Cotta his capital, being represented as "loading a vessel with goods and sending it to Jaffna, to carry on commerce with his son."—*Rajavali*, p. 289.

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and Arabians, and in which, as I have stated, the native Singhalese took no part.

Still, notwithstanding their repugnance to intercourse with strangers, the Singhalese were not destitute of traffic amongst themselves, and their historical annals contain allusions to the mode in which it was conducted. Their cities exhibited rows of shops and bazaars[1], and the country was traversed by caravans much in the same manner as the drivers of *tavalams* carry goods at the present day between the coast and the interior.[2]

Whatever merchandise was obtained in barter from foreign ships, was by this means conveyed to the cities and the capital[3], and the reference to carts which were accustomed to go from Anarajapoora to the division of Malaya, lying round Adam's Peak, "to procure saffron and ginger," implies that at that period (B. C. 165) roads and other facilities for wheel carriages must have existed, enabling them to traverse forests and cross the rivers.[4]

Early Exports of Ceylon.—The native historians give an account of the exports of Ceylon, which corresponds in all particulars with the records left by the early travellers and merchants, Greek, Roman, Arabian, Indian and Chinese. They consisted entirely of natural productions, aromatic drugs, gems, pearls and shells; and it is a strong evidence of the more advanced state of civilisation in India at the same period that, whilst the presents sent from the kings of Ceylon to the native

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[1] B.C. 204, a visitor to Anarajapoora, is described as "purchasing aromatic drugs from the bazaars, and departing by the Northern Gate" (*Mahawanso*, ch. xxiii. p. 139), and A.D. 8, the King Maha Dathika "ranged shops on each side of the streets of the capital."—*Mahawanso*, ch. xxxiv. p. 213.

[2] B.C. 170. *Mahawanso*, ch. xxii. p. 138.

[3] In the reign of Elala, B.C. 204, the son of "an eminent caravan chief" was despatched to a Brahman, who resided near the Chetiyo mountain (Mihintala), in whose possession there were rich articles, frankincense, sandal-wood, &c., imported from beyond the ocean. — *Mahawanso*, ch. xxiii. p. 138.

[4] *Mahawanso*, ch. xxviii. p. 167.

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princes of Hindustan and the Dekkan were always of this precious but primitive character, the articles received in return were less remarkable for the intrinsic value of the material, than for the workmanship bestowed upon them. Devenipiatissa sent by his ambassadors to Asoca, B. C. 306, "the eight varieties of pearls, viz., *haya* (the horse), *gaja* (the elephant), *ratha* (the chariot wheel), *maalaka* (the nelli fruit), *valaya* (the bracelet), *anguliwelahka* (the ring), *kakudaphala* (the kabook fruit), and *pakatika*, the ordinary description. He sent sapphires, lapis lazuli [1], and rubies, a right hand chank [2], and three bamboos for chariot poles, remarkable because their natural marking resembled the carvings of flowers and animals.

The gifts sent by the king of Magadha in return, indicate the advanced state of the arts in Bengal, even at that early period; they were "a chowrie (the royal fly flapper), a diadem, a sword of state, a royal parasol, golden slippers, a crown, an anointing vase, asbestos towels, to be cleansed by being passed through the fire, a costly howdah, and sundry vessels of gold." Along with these was sacred water from the Anotatto lake and from the Ganges; aromatic and medicinal drugs, hill paddi and sandal wood, and amongst the other items "a virgin of royal birth and of great personal beauty." [3]

Early Imports.—Down to a very late period, gems, pearls, and chank shells continued to be the only products taken away from Ceylon, and cinnamon is nowhere mentioned in the Sacred Books as amongst the exports of the island.[4] In return for these exports,

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[1] Lapis lazuli is not found in Ceylon, and must have been brought by the caravans from Budakshan. It is more than once mentioned in the *Mahawanso*, ch. xi. p. 69, ch. xxx. p. 185.

[2] A variety of the *Turbinella rapa* with the whorls reversed, to which the natives attach a superstitious value; professing that a shell so formed is worth its weight in gold.

[3] *Mahawanso*, ch. xi. pp. 69, 70.

[4] For an account of the earliest trade in cinnamon, see *post*, Part v. ch. ii., on the Knowledge of Ceylon possessed by the Arabians.

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slaves, chariots and horses were frequently transmitted from India. The riding horses and chargers, so often spoken of[1], must necessarily have been introduced from thence, and were probably of Arab blood; but I have not succeeded in discovering to what particular race the "Sindhawa" horses belonged, of which four purely white were harnessed to the state carriage of Dutugaimunu.[2] Gold cloth[3], frankincense, and sandalwood were brought from India[4], as was also a species of "clay" and of "cloud-coloured stone," which appear to have been used in the construction of dagobas.[5] Silk[6] and vermilion[7] indicate the activity of trade with China; and woollen cloth[8] and carpets[9] with Persia and Kashmir.

Intercourse with Kashmir.—Possibly the woollen cloths referred to may have been shawls, and there is evidence in the *Rajatarangini*[10], that at a very early period the possession of a common religion led to an intercourse between Ceylon and Kashmir, originating in the sympathies of Buddhism, but perpetuated by the Kashmirians for the pursuit of commerce. In the fabulous period of the narrative, a king of Kashmir is said to have sent to Ceylon for a delicately fine cloth, embroidered with golden footsteps.[11] In the eighth century of the Christian era, Singhalese engineers were sent for to construct works in Kashmir[12]; and Kashmir, according

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[1] *Mahawanso,* ch. xxii. p. 134, &c. &c.

[2] *Ibid.,* ch. xxiii. p. 142; ch. xxxi. p. 186.

[3] A.D. 459. *Mahawanso,* ch. xxxviii. p. 258.

[4] *Ibid.,* ch. xxiii. p. 138.

[5] *Ibid.,* ch. xxix. p. 169, ch. xxx. p. 179.

[6] *Ibid.,* ch. xxiii. p. 139; *Rajaratnacari,* p. 49.

[7] *Ibid.,* ch. xxix. p. 169; *Rajaratnacari,* p. 51.

[8] *Mahawanso,* ch. xxx. p. 177; *Rajavali,* p. 269. Woollen cloth is described as "most valuable"—an epithet which indicates its rarity, and probably foreign origin.

[9] *Mahawanso,* ch. xiv. p. 82; ch. xv. p. 87; ch. xxv. p. 151; carpets of wool, *ib.* ch. xxvii. p. 164.

[10] The *Rajatarangini* resembles the *Mahawanso,* in being a metrical chronicle of Kashmir written at various times by a series of authors, the earliest of whom lived in the 12th century. It has been translated into French by M. Troyer, Paris, 1840.

[11] *Rajatarangini,* b. i. sl. 294.

[12] *Rajatarangini,* b. iv. sl. 502, &c.

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to Troyer, took part in the trade between Ceylon and the West.[1]

Of the trade between Ceylon and Kashmir and its progress, the account given by EDRISI, the most renowned of the writers on eastern geography, who wrote in the twelfth century[2], is interesting, inasmuch as it may be regarded as a picture of this remarkable commerce, after it had attained its highest development.

EDRISI did not write from personal knowledge, as he had never visited either Ceylon or India, but compiling as he did, by command of Roger II., of Sicily, a compendium of geographical knowledge as it existed in his time, the information which he has systematised may be regarded as a condensation of such facts, as the eastern seamen engaged in the Indian trade had brought back with them from Ceylon.

"In the mountains around Adam's Peak," says EDRISI, "they collect precious stones of every description, and in the valleys they find those diamonds, by means of which they engrave the setting of stones on rings."

The same mountains produce aromatic drugs per-

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[1] "La communication entre Kachmîr et Ceylan n'a pas eu lieu seulement par les enterprises guerrières que je viens de rappeler, mais aussi par un commerce paisible; c'est de cette île que venaient des artistes qu'on appelait Rakchasas à cause de merveilleux de leur art; et qui exécutaient des ouvrages pour l'utilité et pour l'ornement d'un pays montagneux et sujet aux inondations. Ceci confirme ce que nous apprennent les géographes Grecs, que Ceylon, avant et après le commencement de notre ère, était un grand point de réunion pour le commerce de l'Orient et de l'Occident."—*Rajatarangini*, vol. ii. p. 434.

[2] Abou-abd-allah Mahommed was a Moor of the family who reigned over Malaga after the fall of the Kalifat of Cordova, in the early part of the 11th century, and his patronymic of Edrisi or Al Edrissy implies that he was descended from the princes of that race who had previously held supreme power in what is at the present day the Empire of Morocco. He took up his residence in Sicily under the patronage of the Norman king, Roger II., A.D. 1154, and the work on geography which he there composed was not only based on the previous labours of Massoudi, Ibn Haukul, Albyrouni, and others, but it embodied the reports of persons commissioned specially by the king to undertake voyages for the purpose of bringing back correct accounts of foreign countries.—See REINAUD's *Introduction to the Geography of Abulfeda*, p. cxiii.

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fumes, and aloes-wood, and there too they find the animal, the civet, which yields musk. The islanders cultivate rice, coco-nuts, and sugar-cane; in the rivers is found rock crystal, remarkable both for brilliancy and size, and the sea on every side has a fishery of magnificent and priceless pearls. Throughout India there is no prince whose wealth can compare with the King of Serendib, his immense riches, his pearls and his jewels, being the produce of his own dominions and seas; and thither ships of China, and of every neighbouring country resort, bringing the wines of Irak and Fars, which the king buys for sale to his subjects; for he drinks wine and prohibits debauchery; whilst other princes of India encourage debauchery and prohibit the use of wine. The exports from Serendib consist of silk, precious stones, crystals, diamonds, and perfumes."[1]

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[1] EDRISI, *Géographie*, Trad. JAUBERT, tom. i. p. 73.

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CHAP. IV.

MANUFACTURES.

THE silk alluded to in the last chapter must have been brought from China for re-exportation to the West. Silk is frequently mentioned in the *Mahawanso* [1], but never with any suggestion of its being a native product of Ceylon.

Coir and Cordage.—EDRISI speaks of cordage made from the fibre of the coco-nut, to prepare which, the natives of Oman and Yemen resorted to Ceylon [2]; so that the Singhalese would appear to have been instructed by the Arabs in the treatment of coir, and its formation into ropes; an occupation which, at the present day, affords extensive employment to the inhabitants of the south and south-western coasts. Ibn Batuta describes the use of coir, for sewing together the planking of boats, as it was practised at Zafar in the 14th century [3]; and the word itself bespeaks its Arabian origin, as ALBYROUNI, who divides the Maldives and Laccadives into two classes, calls the one group the *Dyvah-kouzah*, or islands that produce *cowries;* and the other the *Dyvah-kanbar*, or islands that produce *coir.* [4]

Dress.—The dress of the people was of the simplest

[1] Silk is mentioned 20 B.C. *Raja-ratnacari*, p. 49. *Mahawanso*, ch. xxiii. p. 139.

[2] EDRISI, t. i. p. 74.

[3] *Voyages, &c.*, vol. ii. p. 207. Paris, 1854.

[4] ALBYROUNI, in REYNAUD, *Fragm. Arabes, &c.*, pp. 93, 124. The Portuguese adopted the word from the Hindus, and CASTANEDA, in *Hist. of the Discovery of India*, describes the Moors of Sofalah sewing their boats with "*cayro*," ch. v. 14, xxx. 75.

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kind, and similar to that which is worn at the present day. The bulk of the population wore scanty cloths, without shape or seam, folded closely round the body and the portion of the limbs which it is customary to cover; and the Chinese, who visited the island in the seventh century, described the people as clothed in the loose robe, still known as a "comboy," a word probably derived from the Chinese *koopei*, which signifies cotton.[1]

The wealthier classes indulged in flowing robes, and Bujas Dasa the king, who in the fourth century devoted himself to the study of medicine and the cure of the sick, was accustomed, when seeking objects for his compassion, to appear as a common person, simply "disguising himself by gathering his cloth up between his legs."[2] Robes with flowers[3], and a turban of silk, constituted the dress of state bestowed on men whom the king delighted to honour.[4] Cloth of gold is spoken of in the 5th century, but the allusion is probably made to the kinbaub of India.[5]

MANUAL AND MECHANICAL ARTS. *Weaving.* — The aborigines practised the art of weaving before the arrival of Wijayo. Kuweni, when the adventurer approached her, was "seated at the foot of a tree, spinning thread;"[6] cotton was the ordinary material, but "linen cloth" is mentioned in the second century before Christ.[7] White cloths are spoken of as having been employed, in the earliest times, in every ceremony for covering chairs on which persons of rank were expected to be seated; whole "webs of cloth" were used to wrap the *carandua* in which the sacred relics were enclosed[8], and one of the

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1 See Part v. ch. iii. on the Knowledge of Ceylon possessed by the Chinese.

2 *Mahawanso*, ch. xxxvii. p. 245.

3 By the ordinances of Buddhism it was forbidden to the priesthood "to adorn the body with flowers," thus showing it to have been a practice of the laity. HARDY's *Eastern Monachism*, ch. iv. p. 24; ch. xiii. p. 128.

4 *Mahawanso*, ch. xxiii. p. 139.

5 *Ibid.*, ch. xxxviii. p. 258.

6 *Mahawanso*, ch. vii. p. 48; *Rajavali*, p. 173.

7 *Mahawanso*, ch. xxv. p. 152.

8 *Rajaratnacari*, p. 72.

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kings, on the occasion of consecrating a dagoba at Mihintala, covered with "white cloth" the road taken by the procession between the mountain and capital, a distance of more than seven miles.[1]

In later times a curious practice prevailed, which exists to the present day;—on occasions when it is intended to make offerings of yellow robes to the priesthood, the cotton was plucked from the tree at daybreak, and "cleaned, spun, woven, dyed, and made into garments" before the setting of the sun. This custom, called *Catina Dhawna*, is first referred to in the *Rajaratnacari* in the reign of Prakrama I.[2], A.D. 1153.

The expression "made into garments" alludes to the custom enjoined on the priests of having the value of the material destroyed, before consenting to accept it as a gift, thus carrying out their vow of poverty. The robe of Gotama Buddha was cut into thirty pieces, these were again united, so that they "resembled the patches of ground in a rice field;" and hence he enjoined on his followers the observance of the same practice.[3]

The arts of bleaching and dyeing were understood as well as that of weaving, and the *Mahawanso*, in describing the building of the Ruanwellé dagoba, at Anarajapoora, B.C. 161, tells of a canopy formed of "eight thousand pieces of cloth of every hue."[4]

Earliest Artisans.—VALENTYN, writing on the traditional information acquired from the Singhalese themselves, records the belief of the latter, that in the suite of the Pandyan princess, who arrived to marry Wijayo, were artificers from Madura, who were the first to intro-

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[1] A.D. 8. *Rajavali*, p. 227; *Mahawanso*, ch. xxxiv. p. 213.

[2] See *ante*, Vol. II. p. 35. *Rajaratnacari*, pp. 104, 109, 112, 135; *Rajavali*, p. 261; HARDY's *Eastern Monachism*, ch. xii. pp. 114, 121.

[3] HARDY's *Eastern Monachism*, ch. xii. p. 117. See *ante*, Vol. I. Pt. III. c. iv. p. 351.

[4] *Mahawanso*, ch. xxx. p. 179. See also ch. xxxviii. p. 258.

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duce the knowledge and practice of handicrafts amongst the native population. According to the story, these were goldsmiths, blacksmiths, brass-founders, carpenters, and stone-cutters.[1]

The legend is given with more particularity in an historical notice of the Chalia caste, written by Adrian Rajapaxa, one of their chiefs, who describes these immigrants as Peskare Brahmans, who were at first employed in weaving gold tissues for the queen, but who afterwards abandoned that art for agriculture. A fresh company were said to have been invited in the reign of Devenipiatissa, and were the progenitors of "Saleas, at present called Chalias," who inhabit the country between Galle and Colombo, and who, along with their ostensible occupation as peelers of cinnamon, still employ themselves in the labours of the loom.[2] All handicrafts are conventionally regarded by the Singhalese as the occupations of an inferior class; and a man of high caste would submit to any privation rather than stoop to an occupation dependent on manual skill.

Pottery.—One of the most ancient arts, the making of earthenware vessels, exists at the present day in all its pristine simplicity, and the "potter's wheel," which is kept in motion by an attendant, whilst the hands of the master are engaged in shaping the clay as it revolves, is the primitive device which served a similar purpose amongst the Egyptians and Hebrews.[3]

A "potter" is enumerated in the list of servants and tradesmen attached to the temple on the Rock of Mihintala, A.D. 262, along with a sandal-maker, blacksmiths, carpenters, stone-cutters, goldsmiths, and "makers of

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[1] VALENTYN, *Oud en Niew Oost-Indien*, chap. iv. p. 267.

[2] A History of the Chalias, by ADRIAN RAJAPAXA. *Asiatic Res.* vol. vii. p. 440. *Ib.* vol. x. p. 82.

[3] Pottery is mentioned in the *Mahawanso*, B.C. 161, ch. xxix. p. 173: the allusion is to "new earthen vases," and shows that the people at that time, like the Hindus of to-day, avoided where possible the repeated use of the same vessel.

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strainers" through which the water for the priests was filtered, to avoid taking away the life of animalculæ. The other artisans on the establishment were chiefly those in charge of the buildings, lime-burners, plasterers, white-washers, painters, and a chief builder.

Glass.—Glass, the knowledge of which existed in Egypt and in India[1], was introduced into Ceylon at an early period; and in the *Dipawanso*, a work older than the *Mahawanso* by a century and a half, it is stated that Saidaitissa, the brother of Dutugaimunu, when completing the Ruanwellé dagoba, which his predecessor had commenced, surmounted it with a "glass pinnacle." This was towards the end of the second century before Christ. Glass is frequently mentioned at later periods; and a "glass mirror" is spoken of[2] in the third century before Christ, but how made, whether by an amalgam of quicksilver or by colouring the under surface, is not recorded.

Leather.—The tanning of leather from the hide of the buffalo was understood so far back as the second century before Christ, and "coverings both for the back and the feet of elephants" were then formed of it.[3]

Wood-carving.—Carving in sandal-wood and inlaying with ivory, of which latter material "state fans and thrones" were constructed for the Brazen Palace[4], are amongst the mechanical arts often alluded to; and during the period of prosperity which signalised the era of the "Great Dynasty," there can be little doubt that skilled artificers were brought from India to adorn the cities and palaces of Ceylon.

Chemical Arts.—A rude knowledge of chemical ma-

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[1] Dr. ROYLE's *Lectures on the Arts and Manufactures of India*, 1852, p. 221. PLINY says the glass of India being made of pounded crystal, none other can compare with it. (Lib. xxxvi. c. 66.)

[2] *Mahawanso*, ch. xv. p. 99, ch. xxx. p. 182.

[3] *Ibid.*, ch. xxv. p. 152, ch. xxix. p. 169.

[4] *Ibid.*, ch. xxvii. p. 163, 164.

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nipulation was required for the extraction of camphor[1] and the preparation of numerous articles specified amongst the productions of the island, aromatic oils[2], perfumes[3], and vegetable dyes.

Sugar.—Sugar was obtained not only from the Palmyra and Kittool palms[4], but also from the cane; which, besides being a native of India, was also indigenous in Ceylon.[5] A "sugar mill" for expressing its juice existed in the first century before Christ in the district of the "Seven Corles,"[6] where fifteen hundred years afterwards a Dutch governor of the island made an attempt to restore the cultivation of sugar.

Mineral Paints.—Mineral preparations were made with equal success. Red lead, orpiment, and vermilion are mentioned as pigments; but as it is doubtful whether Ceylon produces quicksilver, the latter was probably imported from China[7] or India, where the method of preparing it has long been known.

There is likewise sufficient evidence in these and a number of other preparations, as well in the notices of perfumes, camphor, and essential oils, to show that the Singhalese, like the Hindus, had a very early acquaintance with chemical processes and with the practice of

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[1] *Rajaratnacari*, p. 133. Dr. ROYLE doubts whether camphor was known to the Hindus at this early period, but "camphor oil" is repeatedly mentioned in the Singhalese chronicles amongst the articles provided for the temples. — ROYLE's *Essay on Hindoo Medicine*, p. 140; *Rajavali*, p. 190.

[2] *Mahawanso*, ch. xxv. p. 157.

[3] B.C. 161. *Mahawanso*, ch. xxx. p. 180.

[4] "Palm sugar," as distinguished from "cane sugar," is spoken of in the *Mahawanso* in the second century B.C. ch. xxvii. p. 163.

[5] "Cane sugar" is referred to in the *Mahawanso*, B.C. 161, c. xxvii. p. 162, c. xxxi. p. 192.

[6] A.D. 77. *Mahawanso*, ch. xxxiv. p. 208.

[7] See *ante*, Vol. I. Part I. ch. i. p. 29. n. Both quicksilver and vermilion are mentioned in the *Rajaratnacari*, p. 51, as being in use in the year 20 B.C. Vermilion is also spoken of B.C. 307 in the *Mahawanso*, ch. xxvii. p. 162, c. The two passages in which *vermilion* is spoken of in the Old Testament, Jerem. xxii. 14, and Ezek. xxiii. 14, both refer to the painting of walls and woodwork, a purpose to which it would be scarcely suitable, were not the article alluded to the opaque bisulphuret of mercury; and the same remark applies to the vermilion used by the Singhalese. The bright red obtained from the insect coccus (the *vermiculus*, whence the original term "vermilion" is said to be derived) would be too transparent to be so applied.

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distillation, which they retain to the present day.[1] The knowledge of the latter they probably acquired from the Arabs or Chinese.

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[1] "I was frequently visited by one old man, a priest, who had travelled through Bengal, Burmah, Siam, and many other countries, and who prided himself on being able *to make calomel* much better than the European doctors, as his preparation did not cause the falling out of the teeth, soreness of the mouth, or salivation. He learnt the secret from an ancient sage whom he met with in a forest on the continent of India; and often when listening to him I was reminded of the mysteries and crudities of the alchemists."—HARDY'S *Eastern Monachism*, Lond. 1850, ch. xxiii. p. 312.

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CHAP. V.

WORKING IN METALS.

METALS. *Iron.*—Working in metals was early understood in Ceylon. Abundance of iron ore can be extracted from the mountains round Adam's Peak; the black oxide is found on the eastern shore in the state of iron-sand; and both are smelted with comparative ease by the natives. Iron tools were in use for the dressing of stones; and in the third century before Christ, the enclosed city of Wijittapoora was secured by an "iron gate."[1]

Steel.—The manufacture of arms involved the use of steel, the method of tempering which was derived from the Hindus, by whom the *wootz* was prepared, of which the genuine blades of Damascus are shown to have been made, the beauty of their figuring being dependent on its peculiar crystallisation.[2]

Copper.—Copper was equally in demand, but, like silver and gold, it is nowhere alluded to as a production of the island. In ancient, as in modern times, therefore, the numerous articles formed from this metal were probably imported from India. The renowned Brazen Palace of Anarajapoora was so named from the quantity of copper used in its construction. Bujas Raja, A.D. 359, covered a building at Attanagalla with "tiles made of copper, and gilt with gold,"[3] and "two boats built of brass," were placed near the Bo-Tree at the capital "to hold food for the priests."[4] Before the

[1] *Mahawanso*, ch. xxv. p. 152.

[2] ROYLE *on the Antiquity of Hindoo Medicine*, p. 98.

[3] *Rajaratnacari*, p. 73.

[4] *Ibid.*, p. 60.

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Christian era, armour for elephants[1], and vessels of large dimensions, cauldrons[2], and baths[3], were formed of copper. The same material was used for the lamps, goblets[4], kettles, and cooking utensils of the monasteries and wiharas.

Bells.—Bells were hung in the palaces[5], and bell-metal is amongst the gifts to the temples recorded on the rock at Pollanarrua, A.D. 1187.[6]

Bronze.—Bronze was cast into figures of Buddha[7], and the *Mahawanso*, describing the reign of Dhatu-Sena, A.D. 459, makes mention of "sixteen bronze statues of virgins having the power of locomotion."[8]

Lead.—Lead was used during the wars of Dutugaimunu and Elala, and poured molten over the attacking elephants during the siege of Wijittapoora.[9] As lead is not a native product of Ceylon, it must have been brought thither from Ava or Malwa.

Gold and Silver.—Ceylon, like the continent of India, produces no silver and gold, save in the scantiest quantities.[10] The historical books, in recording the splendour of the temples and their riches, and the wealth lavished by the kings upon the priesthood, describe in perpetually recurring terms, the multitude of ornaments and vessels made of silver and gold. In early times the most precious of these were received as gifts from the princes of India, and in the second century before Christ the *Mahawanso* records the arrival of ships in the south of the island, "laden with golden utensils."[11] A variety of

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1 *Rajavali*, p. 214.

2 B.C. 204. *Rajavali*, p. 190.

3 A.D. 1267. *Rajaratnacari*, p. 104.

4 *Rajaratnacari*, pp. 104, 134.

5 *Mahawanso*, ch. xxi. pp. 128, 129.

6 TURNOUR'S *Epitome, &c.*, Appx. p. 91.

7 A.D. 275. *Mahawanso*, ch. xxxvii. p. 236; *Rajavali*, p. 135.

8 *Mahawanso*, ch. xxxviii. p. 257.

9 *Mahawanso*, ch. xxv. p. 152.

10 Amongst the miracles which signalised the construction of the Ruanwellé dagoba at Anarajapoora was the sudden appearance in a locality to the north-east of the capital of "sprouts" of gold above and below the ground, and of silver in the vicinity of Adam's Peak.—*Mahawanso*, ch. xxviii. pp. 166, 167.

11 *Mahawanso*, ch. xxii. p. 153.

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articles of silver are spoken of at very early periods. Dutugaimunu, when building the great dagoba, caused the circle of its base to be described by "a pair of compasses made of silver, and pointed with gold;"[1] parasols, vases, caranduas and numerous other regal or religious paraphernalia, were made from this precious material. Gold was applied in every possible form and combination to the decoration and furnishing of the edifices of Buddhism;—"trees of gold with roots of coral,"[2] flowers formed of gems with stems of silver[3], fringes of bullion mixed with pearls; umbrellas, shields, chains, and jewelled statuettes[4], are described with enthusiasm by the annalists of the national worship.

The abundance of precious stones naturally led to their being extensively mounted in jewelry, and in addition to those found in Ceylon, diamonds[5] and lapis lazuli[6] (which must have been brought thither from India and Persia) are classed with the native sapphire and topaz, which are natives of the island.

The same passion existed then, as now, for covering the person with ornaments; gold, silver, and gems were fashioned into rings for the ears, the nose, the fingers, and toes, into plates for the forehead, and chains for the neck, into armlets, and bracelets, and anklets, and into decorations of every possible form, not only for the women, but for men, and above all, for the children of both sexes. The poor, unable to indulge in the luxury of precious metals, found substitutes in shells and glass; and the extravagance of the taste was defended on the ground that their brilliancy served to

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1 *Mahawanso*, ch. xxx. p. 172.

2 Red coral, equal in its delicacy of tint to the highly-prized specimens from the Mediterranean, is found in small fragments on the sea-shore north of Point de Galle.

3 *Mahawanso*, ch. xxx. p. 179.

4 *Mahawanso*, *ib.* p. 180.

5 *Rajaratnacari*, p. 61.

6 *Mahawanso*, ch. xxx. p. 182.

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avert the malignity of "the evil eye" from the wearer to the jewel.

Gilding.—Gilding was likewise understood by the Singhalese in all its departments, both as applied to the baser metals and to other substances—wood-work was gilded for preaching places[1], as was also copper for roofing, cement for decorating walls, and stone for statuary and carving.[2]

Coin.—Although the Singhalese through their sacred writings had a knowledge of coined money, and of its existence in India from a period little subsequent to the death of Gotama Buddha[3]; and although their annalists give the names of particular coins in circulation[4], at various times, no Singhalese money has yet been discovered of a date antecedent to the eleventh century. The Chinese in the fifteenth century spoke with admiration of the gold pieces struck by the kings of Ceylon,

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[1] *Rajaratnacari*, p. 60.

[2] Rock inscription at Pollanarrua, A.D. 187—196.

[3] The *Mahawanso* mentions the existence of coined metals in India in the tenth year of the reign of Kalasoka, a century from the death of Buddha, ch. iv. p. 15. According to HARDY, in the most ancient laws of the Buddhists the distinction is recognised between coined money and bullion. — *Eastern Monachism*, vol. vii. p. 66.

[4] The coins mentioned in the *Mahawanso*, *Rajaratnacari*, and *Rajavali* are as follows: B.C. 161, the *kahapanan* (*Mahawanso*, ch. xxx. pp. 157, 175), which TURNOUR says was a gold coin worth ten *massakan* or *massa*. The latter are "the pieces of gold formerly current in Ceylon," a heap of which, according to the *Rajaratnacari* (p. 48), was seen by King Bhatia Tissa when he was permitted to penetrate into the chamber of the Ruanwellé dagoba, A.D. 137. The silver massa, according to TURNOUR, was valued at eightpence. These are repeatedly mentioned in the *Rajaratnacari* (A.D. 201, p. 60, A.D. 234, p. 62, A.D. 1262, p. 102, A.D. 1301, p. 107, A.D. 1462, p. 113). The *Rajavali* speaks of "gold massa" as in circulation in the time of Dutugaimunu, B.C. 161 (p. 201). The word *masa* in Singhalese means "pulse," or any description of "beans;" and it seems not improbable that the origin of the term as applied to money may be traced to the practice in the early Indian coinage of stamping small *lumps* of metal to give them authentic currency. It can only be a coincidence that the Roman term for an ingot of gold was "*massa*" (PLINY, L. xxxiii. c. 19). These Singhalese massa were probably similar to the "punched coins," having rude stamps without effigies, and rarely even with letters, which have been turned up at Kanooj, Oujein, and other places in Western India. A copper coin is likewise mentioned in the fourteenth century, in the *Rajavali*, where it is termed *caroosharpa*; the value of which UPHAM, without naming his authority, says was "about a pice and a half." —P. 136.

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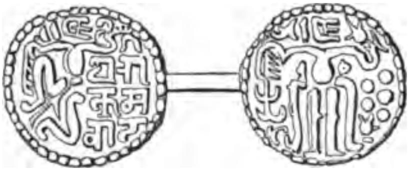
which they found in circulation on their frequent visits to the emporium at Galle[1]; but of these only a few very rare examples have been preserved, one of which bears the effigy and name of Lokaiswaira[2], who usurped the throne during a period of anarchy about A. D. 1070. Numbers of small copper coins of the eleventh and twelfth centuries have from time to time been dug up both in the interior and on the coast of the island.[3] A quantity of these which were found in 1848 by Lieutenant Evatt, when in command of a pioneer corps near the village of Ambogamoa, were submitted to Mr. Vaux of the British Museum, and prove to belong to the reign of Wijayo Bahu, A. D. 1071, Prakrama I., A. D. 1153, the Queen Lilawatte, A. D. 1197, King Sahasamallawa, A. D. 1200, Darmasoka, A. D. 1208, and Bhuwaneka Bahu, A. D. 1303. These coins have one and all the same device on the obverse,—a rude standing figure of the Raja holding the *trisula* in his left hand, and a flower in the right. His dress is a flowing robe, the folds of which are indicated rather than imitated by the artist; and on the reverse the same figure is seated, the name in Nagari characters being placed beside the face.[4]



The Kandyans, by whom these coins are frequently found, give the copper pieces the name of Dambedenia

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[1] *Woo hëŏ pëen* "Records of the Ming Dynasty," A.D. 1522, B. lxviii. p. 5. *Suh Wan hëen tung kaou,* "Antiquarian Researches," B. ccxxxvi. p. 11.

[2] Two gold coins of Lokaiswaira are in the collection of the British Museum, and will be found described by Mr. VAUX in the 16th vol. of the *Numismatic Chronicle,* p. 121.

[3] There is a Singhalese coin figured in DAVY'S *Ceylon,* p. 245, the legend on which is turned upside down, but when reversed it reads, "*Sri Pa-ra-kra-ma Bahu.*"

[4] *Numismatic Chronicle,* vol. xvi. p. 124.

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challies, and tradition, with perfect correctness, assigns them to the twelfth and thirteenth centuries, when the kings of that period are believed to have had a mint at Dambedenia.

A quantity of coins similar in every respect to those dug up in Ceylon have been found at Dipaldinia or Amarawati, on the continent of India, near the mouth of the Kistna; a circumstance which might be accounted for by the frequent intercourse between Ceylon and the coast, but which is possibly referable to the fact recorded in the *Mahawanso* that Prakrama I., after his successful expedition against the King of Pandya, caused money to be coined in his own name before retiring to Ceylon.[1]

Hook-money.—No ancient silver coin has yet been found, but specimens are frequently brought to light of the *ridis*, pieces of twisted silver wire, which from their being sometimes bent with a considerable curve have been called "*Fish-hook money.*" These are occasionally impressed with a legend, and for a time the belief obtained that they were a variety of ring-money peculiar to Ceylon.[2] Of late this error has been

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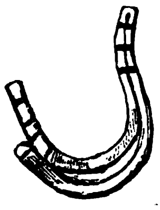
[1] *Mahawanso*, c. lxxvi. pp. 298, 299, UPHAM's *Trans.* The circumstance is exceedingly curious of coins of Prakrama, "identical" with those found at Dambedenia, in Ceylon, having also been discovered at Dipaldinia, on the opposite continent; and it goes far to confirm the accuracy of the *Mahawanso* as to the same king having coined money in both places. Those found in the latter locality form part of the Mackenzie Collection, and have been figured in the *Asiat. Researches*, xvii. 597, and afterwards by Mr. PRINSEP in the *Journ. of the Asiat. Soc. of Bengal*, vi. 301. See also a notice of Ceylon coins, in the *Journ. As. Soc. Beng.* iv. 673, vi. 218; CASIE CHITTY, in the *Journ. of the Ceylon Asiat. Soc.*, 1847, p. 9, has given an account of a hoard of copper coins found at Calpentyn in 1839; and Mr. Justice STARKE, in the same journal, p. 149, has given a *résumé* of the information generally possessed as to the ancient coins of the island. PRINSEP's paper on *Ceylon Coins* will be found in vol. i. of the recent reprint of his *Essays on Indian Antiquities*, p. 419. Lond. 1858.

[2] This error may be traced to the French commentator on RIBEYRO's *History of Ceylon*, who describes the fish-hook money in use in the kingdom of Kandy, whilst the Portuguese held the low country, as so simple in its form that every man might make it for himself: "Le Roy de Candy avoit aussi permis à ses peuples de se servir d'une *monnoye* que chacun peut fabriquer."—Ch. x. p. 81.

corrected; the letters where they occur have been shown to be not Singhalese or Sanskrit, but Persian, and the tokens themselves have been proved to belong to Laristan on the Persian Gulf, from the chief emporium of which, Gambroon, they were brought to Ceylon in the course of Indian commerce; chiefly by the Portuguese, who are stated by VAN CARDAEN to have introduced them in great quantities into Cochin and the ports of Malabar.[1] There they were circulated so freely that an edict of Prakrama enumerates the *ridi* amongst the coins in which the taxes were assessed on land.[2]



HOOK MONEY.

In India they are called *larins*, and money in imitation of them, struck by the princes of Bijapur and by Sivaji, the founder of the Mahrattas, were in circulation in the Dekkan as late as the seventeenth century.[3]

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[1] "Les larins sont tout-à-fait commodes et necessaires dans les Indes, surtout pour acheter du poivre à Cochin, où l'on en fait grand état."—*Voyage aux Indes Orientales.* Amsterdam, A.D. 1716, vol. vi. p. 626.

[2] Rock-inscription at Dambool, A.D. 1200. The *Rajavali* mentions the *ridis* as in circulation in Ceylon at the period of the arrival of the Portuguese, A.D. 1505.—P. 278.

[3] Prof. WILSON's *Remarks on Fish-hook Money, Numism. Chronic.* 1854, p. 181.

CHAP. VI.

ENGINEERING.

It has already been shown[1] that the natives of Ceylon received their earliest instruction in engineering from the Brahmans, who attached themselves to the followers of Wijayo and his immediate successors.[2] But whilst astonished at the vastness of conception observable in the works executed at this early period, we are equally struck by the extreme simplicity of the means employed by their designers for carrying their plans into execution; and the absence of all ingenious expedients for husbanding or effectively applying manual labour. The earth which forms their prodigious embankments was carried in baskets[3] by the labourers, in the same primitive fashion which prevails to the present day. Stones were detached in the quarry by the slow and laborious process of wedging, of which they still exhibit the traces; and those intended for prominent positions were carefully dressed with iron tools. For moving them no mechanical contrivances were resorted to[4], and it can only have been by animal power, aided by ropes and rollers, that vast

[1] See Vol. I. Part IV. chap. ii. p. 430.

[2] King Pandukábhaya, B.C. 437, "built a residence for the Brahman Jótiyo, the chief engineer."—*Mahawanso*, c. x. p. 66.

[3] *Mahawanso*, ch. xxiii. p. 144.

[4] The only instance of mechanism applied in aid of human labour is referred to in a passage of the *Mahawanso*, which alludes to a decree for "raising the water of the Abhaya tank by means of machinery," in order to pour it over a dagoba during the solemnisation of a festival, B.C. 20.—*Mahawanso*, ch. xxxiv. p. 211; *Rajaratnacari*, p. 51.

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blocks like the great tablet at Pollanarrua were dragged to their required positions.[1]

Fortifications.—Of military engineering the Singhalese had a very slight knowledge. Walled towns and fortifications are frequently spoken of, but the ascertained difficulty of raising, squaring, or carrying stones, points to the inference which is justified by the expressions of the ancient chronicles, that the walls they allude to, must have been earthworks[2], and that the strength of their fortified places consisted in their inaccessibility. The first recorded attempt at fortification was made by the Malabars in the second century before Christ for the defence of Wijitta-poora, which is described as having been secured by walls, a fosse, and a gate.[3] Elala about the same period built "thirty-two bulwarks" at Anarajapoora[4]; and Dutugaimunu, in commencing to besiege him in the city, followed his example, by throwing up a "fortification in an open plain," at a spot well provided with wood and water.[5]

At a later time, the Malabars, when in possession of the northern portion of the island, formed a chain of strong "forts" from the eastern to the western coast, and the Singhalese, in imitation of them, occupied similar positions. The most striking example of mediæval fortification which still survives, is the imperishable rock of Sigiri, north-east of Dambool, to which the infamous Kassyapa retired with his treasures, after the assassination of his father, king Dhatu Sena, A.D. 459; when having cleared its vicinity, and sur-

[1] No document is better calculated to impress the reader with a due appreciation of the indomitable perseverance of the Singhalese in works of engineering than the able report of Messrs. ADAMS, CHURCHILL, and BAILEY, on the great *Canal from Ellahara to Gantalawa*, appended to the Ceylon Calendar for 1857.

[2] Makalantissa, who reigned B.C. 41, "built a rampart seven cubits high, and dug a ditch round the capital."—*Mahawanso*, ch. xxxiv. p. 210.

[3] *Rajavali*, p. 212; *Mahawanso*, ch. xxv. p. 151.

[4] *Rajavali*, p. 187.

[5] *Rajavali*, p. 216; *Mahawanso*, ch. xxv. p. 152.

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rounded it by a rampart, the figures of lions with which he decorated it, obtained for it the name of Sihagiri, the "Lion-rock." But the real defences of Sigiri were its precipitous cliffs, and its naturally scarped walls, which it was not necessary to strengthen by any artificial structures.

Their rocky hills, and the almost impenetrable forests which enveloped them, were in every age the chief security of the Singhalese; and so late as the 12th century, the inscription engraved on the rock at Dambool, in describing the strength of the national defences under the King Kirti Nissanga, enumerates them as "strongholds in the midst of forests, and those upon steep hills, and the fastnesses surrounded by water."[1]

Thorn-gates. — The device, retained down to the period of the capture of Kandy by the British, when the passes into the hill country were defended by thick plantations of formidable thorny trees, appears to have prevailed in the earliest times. The protection of Mahelo, a town assailed by Dutugaimunu, B.C. 162, consisting in its being "surrounded on all sides with the thorny *dadambo* creeper, within which was a triple line of fortifications."[2]

Bridges. — As to bridges, Ceylon had none till the end of the 13th century[3], and Turnour conjectures that even then they were only formed of timber.

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[1] TURNOUR'S *Epitome* and *Appendix*, p. 95.

[2] *Mahawanso*, ch. xxv. p. 153. When Albuquerque attacked Malacca in A.D. 1511, the chief who defended the place "covered the streets with poisoned thorns, to gore the Portuguese coming in." FARIA Y SOUZA, vol. i. p. 180. VALENTYN, in speaking of the dominions of the King of Kandy during the Dutch occupation of the Low Country, describes the density of the forests, "which not only serve to divide the earldoms one from another, but, above all, tend to the fortification of the country, on which account no one dare, on pain of death, to thin or root out a tree, more than to permit a passage for one man at a time, it being impossible to pass through the rest thereof." — VALENTYN, *Oud en Nieuw Oost-Indien, &c.*, ch. i. p. 22. KNOX gives a curious account of these "thorn-gates." (Part. ii. chap. vi. p. 45.)

[3] TURNOUR'S *Epitome* and *Notes*, p. 72. Major Forbes says, however,

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like the Pons Sublicius at Rome. At a later period stone pillars were used in pairs, on which beams or slabs were horizontally rested, in order to form a roadway[1], in the same manner that Herodotus describes the most ancient bridge on record, which was constructed by Queen Nitocris, at Babylon; the planks being laid during the day and lifted again at night, for the security of the city.[2] The principle of the arch appears never to have been employed in bridge building. Ferries, and the taxes on crossing by them, are alluded to down to a very late period amongst other sources of revenue.[3]

In forming the bunds of their reservoirs and of the stone dams which they drew across the rivers that were to supply them with water, they were accustomed, with incredible toil, infinitely increased by the imperfection of tools and implements, to work a raised moulding in front of the blocks of stone, so that each course was retained in position, not alone by its own weight, but by the difficulty of forcing it forward by pressure from behind.

The conduits by which the accumulated waters were distributed, required to be constructed under the bed of the lake, so that the egress should be certain and equal[4], as long as any water remained in the tank. To effect this, they were cut in many instances through solid granite; and their ruins present singular illustrations of determined perseverance, undeterred by the most discouraging difficulties, and unrelieved by the slightest appliance of ingenuity to diminish the toil of excavation.

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there is reason to believe that the remains of stone piers across the Kalawa-oya, on the line between Kornegalle and Anarajapoora, are the ruins of the bridge erected by King Maha Sen, A.D. 301.

[1] *Mahawanso*, ch. lxxxv. UPHAM'S translation, pp. 340, 349; *Rajaratnacari*, pp. 104, 131. The bridge on the Wanny hereafter described (see vol. ii. p. 474) was thus constructed.

[2] Herodotus, i. 186.

[3] *Mahawanso*, ch. xxiii. pp. 136, 138, ch. xxv. p. 150; *Rajaratnacari*, p. 112.

[4] The Lake of Albano presents an example of a conduit or "emissary" of this peculiar construction to draw off the water. It is upwards of 6000 feet in length. A similar emissary serves a like purpose at Lake Nemi.

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It cannot but exalt our opinion of a people, to find that, under disadvantages so signal, they were capable of forming such a work as the Kalaweva tank, between Anarajapoora and Dambool, which TURNOUR justly says, is the greatest of the ancient works in Ceylon. This enormous reservoir was forty miles in circumference, with an embankment twelve miles in extent, and the spill-water, ineffectual for the purpose designed, is "one of the most stupendous monuments of misapplied human labour."[1]

When to such inherent deficiencies were added the alarms of frequent invasion and all the evils of almost incessant occupation by a foreign enemy, it is only surprising that the Singhalese preserved so long the degree of expertness in engineering to which they had originally attained. No people in any age or country had so great practice and experience in the construction of works for irrigation; and so far had the renown of their excellence in this branch reached, that in the eighth century, the king of Kashmir, Djaya-pida, "sent to Ceylon for engineers to form a lake."[2] But after the reign of Prakrama I., the decline was palpable and progressive. No great works, either of ornament or utility, no temples nor inland lakes, were constructed by his successors; and it is remarkable, that even during his own reign, artificers were brought from the coast of India to repair the monuments of Anarajapoora.[3] The last great work attempted for irrigation was probably the Giant's tank, north-east of Aripo; but so much

[1] TURNOUR'S *Mahawanso*, Index, p. xi. This stupendous work was constructed A.D. 459. *Mahawanso*, ch. xxxviii. p. 256.

[2] A.D. 745. *Rajataringini*, b. iv. sl. 502, 505.

[3] *Mahawanso*, UPHAM'S transl., ch. lxxv. p. 294. This passage in the *Mahawanso* might seem to imply that it was as an act of retribution that Malabars, by whom the monuments had been injured, were compelled to restore them. But in ch. lxxvii. it is stated that they were brought from India for this purpose, because it "had been found impracticable by other kings to renew and repair them."—P. 305.

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had practical science declined, that after an enormous expenditure of labour in damming up the Moeselley river, whose waters were to have been diverted to the lake, it was discovered that the levels were unsuitable, and the work was abandoned in despair.[1]

The talents of the civil engineer were likewise employed in providing for the health and comfort of their towns and the *Dipawanso*, a chronicle earlier in point of date than the *Mahawanso*, relates that Wasabha, who reigned between A.D. 66 and 110, constructed a tunnel ("um-maggo") for the purpose of supplying Anarajapoora with water.[2]

[1] For an account of the present condition of the Giant's Tank, see Vol. II. Part x. ch. ii.

[2] *Journ. Asiat. Soc. Beng.* vol. vii. p. 933.

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CHAP. VII.

THE FINE ARTS.

MUSIC. — The science and practice of the fine arts were never very highly developed amongst a people whose domestic refinement became arrested at a very early stage; and whose efforts in that direction were almost wholly confined to the exaltation of the national faith, and the embellishment of its temples and monuments.

Their knowledge of music was derived from the Hindus, by whom its study was regarded as of equal importance with that of medicine and astronomy; and hence amongst the early Singhalese, along with the other "eighteen sciences,"[1] music was taught as an essential part of the education of a prince.[2]

But unlike the soft melodies of Hindustan, whose characteristic is their gentle and soothing effect, the music of the Singhalese appears to have consisted of sound rather than of harmony; modulation and expression having been at all times subordinate to volume and metrical effect.

Reverberating instruments were their earliest inventions for musical purposes, and those most frequently alluded to in their chronicles are drums, resembling the tom-toms used in the temples to the present day. The same variety of form prevailed then as now, and

[1] This fact is curious, seeing that at the present day the cultivation of music belongs to one of the lowest castes in Ceylon.

[2] *Mahawanso*, ch. lxiv.; UPHAM'S version, p. 256. An ingenious paper on *Singhalese Music*, by Mr. Louis Nell, is printed in the *Journ.* of the Ceylon branch of the *Roy. Asiat. Soc* for 1856-8, p. 200.

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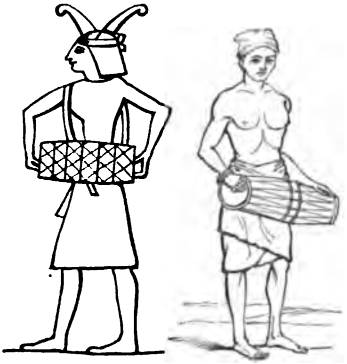
the *Rajavali* relates, in speaking of the army of Dutugaimunu, that in its march the "rattling of the sixty-four kinds of drums made a noise resembling thunder breaking on the rock from behind which the sun rises." [1] The band of Devenipiatissa, B.C. 307, was called the *talawachara*, from the multitude of drums [2]: chank-shells contributed to swell the din, both in warfare [3] and in religious worship [4]; choristers added their voices [5]; and the triumph of effect consisted in "the united crash of every description, vocal as well as instrumental." [6] Although "a full band" is explained in the *Mahawanso* to imply a combination of "all descriptions of musicians," no flutes or wind instruments are particularised, and the incidental mention of a harp only occurs in the reign of Dutugaimunu, B.C. 161.[7] Joinville says, that certain musical principles were acknowledged in Ceylon at an early period, and that "pieces are to be seen in some of the old Pali



ANCIENT EGYPTIAN AND MODERN SINGHALESE TOM-TOM BEATERS.

[1] *Rajavali*, pp. 217, 219. At the present day, there are four or five varieties of drums in use:—the tom-tom or *tam-a-tom*, properly so-called, which consists of two cylinders placed side by side, and is beaten with two sticks;—the *daelle*, a single cylinder struck with a stick at one end, and with the hand at the other;—the *ou-daelle*, which is held in the left hand, and struck with the right;—and the *berri*, which is suspended from the beater's neck, and struck with both hands, one at each end, precisely as a similar instrument is shown in some of the Egyptian monuments.

[2] *Mahawanso*, ch. xvii. p. 104.

[3] B.C. 161. *Mahawanso*, ch. xxv. p. 154.

[4] B.C. 20. *Rajavali*, p. 51.

[5] *Mahawanso*, ch. xxv. p. 157.

[6] *Mahawanso*, ch. xxvi. p. 186.

[7] *Mahawanso*, ch. xxx. p. 180. The following passage in Upham's translation of the *Mahawanso*, ch. lxxii. vol. i. p. 274, would convey the idea that the Æolian harp was meant, or some arrangement of strings calculated to elicit similar sounds:—"The king Prakrama built a palace at the city of Pollanarrua; and the stone works were carved in the shape of flowers and creeping plants, *with golden networks which gave harmonious sounds, as if they were moved by the air.*"

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books in regular notation; the gamut, which was termed *septa souere*, consisting of seven notes, and expressed not by signs, but in letters equivalent to their pronunciation, *sa*, *ri*, *ga*, *me*, *qa*, *de*, *ni*.[1] At the present day, harmony is still superseded by sound, the singing of the Singhalese being a nasal whine, not unlike that of the Arabs. Flutes, almost insusceptible of modulation, chanks, which give forth a piercing scream, and the overpowering roll of tom-toms, constitute the music of the temples; and all day long the women of a family will sit round a species of timbrel, called *rabani*, and produce from it the most monotonous, but to their ear, most agreeable noises, by drumming with the fingers.

Painting.—Painting, whether historical or imaginative, is only mentioned in connection with the decoration of temples, and no examples survive of sufficient antiquity to exhibit the actual state of the art at any remote period. But enough is known of the trammels imposed upon all art, to show that from the earliest times, imagination and invention were prohibited by the priesthood; and although execution and facility may have varied at different eras, design and composition were stationary and unalterable.

Like the priesthood of Egypt, those of Ceylon regulated the mode of delineating the effigies of their divine teacher, by a rigid formulary, with which they combined corresponding directions for the drawing of the human figure in connection with sacred subjects. In the relics of Egyptian painting and sculpture, we find "that the same formal outline, the same attitudes and postures of the body, the same conventional modes of representing the different parts, were adhered to at the latest, as at the earliest periods. No improvements were admitted; no attempts to copy nature or to give proper action to the limbs. Certain rules and certain

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[1] JOINVILLE, *Asiat. Researches*, vol. vii. p. 488.

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models had been established by law, and the faulty conceptions of early times were copied and perpetuated by every succeeding artist."[1]

The same observations apply, almost in the same terms, to the paintings of the Singhalese. The historical delineations of the exploits of Gotama Buddha and of his disciples and attendants, which at the present day cover the walls of the temples and wiharas, follow, with rigid minuteness, pre-existing illustrations of the sacred narratives. They appear to have been copied, with a devout adherence to colour, costume, and detail, from designs which from time immemorial have represented the same subjects; and emaciated ascetics, distorted devotees, beatified simpletons, and malefactors in torment, are depicted with a painful fidelity, akin to modern pre-Raphaelitism.

Owing to this discouragement of invention, one series of pictures is so servile an imitation of another, that design has never improved in Ceylon; one scene is but the facsimile of a previous one, and each may almost be regarded as an exponent of the state of the art at any preceding period.[2]

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[1] Sir GARDNER WILKINSON'S *Ancient Egyptians,* vol. iii. ch. x. p. 87, 264.

[2] The Egyptians and Singhalese were not, however, the only authorities who overwhelmed invention by ecclesiastical conventionalism. The early artists of Greece were not at liberty to follow the bent of their own genius, or to depart from established regulations in representing the figures of the gods. In the middle ages, the influence of the churches, both of Rome and Byzantium, was productive of a similar result; and although the Latins early emancipated themselves, the painters of the Greek church, to the present hour, labour under the identical trammels which crippled art at Constantinople a thousand years ago. M. DIDRON, who visited the churches and monasteries of Greece in 1839, makes the remark that "ni le temps ni le lieu ne font rien à l'art Grec: au XVIIIe siècle, le peintre Moréote continue et calque le peintre Vénétien du Xe, le peintre Athonite du Ve ou VIe. Le costume des personnages est partout et en tout temps le même, non-seulement pour la forme, mais pour la couleur, mais pour le dessin, mais jusque pour le nombre et l'épaisseur des plis. On ne saurait pousser plus loin l'exactitude traditionelle, l'esclavage du passé." (*Manuel d'Iconographie Chrétienne Grecque et Latin,* p. ix.) The explanation of this fact is striking. Mount Athos is the grand manufactory of pictures for the Greek churches throughout the world; and M. DIDRON found the artists producing, with the servility

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Hence even the most modern embellishments in the temples have an air of remote antiquity. The colours are tempered with gum; and but for their inferiority in drawing the human figure, as compared with the Egyptians, and their defiance of the laws of perspective, their inharmonious tints, coupled with the whiteness of the ground-work, would remind one of similar peculiarities in the paintings in the Thebaid, and the caves of Beni Hassan.

FA HIAN describes in the fourth century precisely the same series of subjects and designs which are delineated in the temples of the present day, and taken from the transformation of Buddha. With hundreds of these, he says, painted in appropriate colours and executed in imitation of life, the king caused both sides of the road to be decorated on the occasion of religious processions.[1]

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and almost the rapidity of machinery, endless facsimiles of pictures in rigid conformity with a recognised code of instructions drawn up under ecclesiastical authority and entitled Ἑρμηνεία τῆς Ζωγραφικῆς, "The Guide for Painting," a literal translation of which he has published. This very curious manuscript contains minute directions for the figures, costume, and attitude of the sacred characters, and for the preparation of many hundreds of historical subjects required for the decoration of churches. The artist, when solicited by M. Didron to sell "cette bible de son art," naïvely refused, on the simple ground that "s'il se dépouillait de ce livre, il ne pourrait plus rien faire; en perdant son Guide, il perdait son art, il perdait ses yeux et ses mains" (*ib.* p. xxiii). It was not till the fifteenth century that the painters of Italy shook themselves free of the authority of the Latin church in matters of art. The second council of Nice arrogates to the Roman church the authority in such matters still retained by the Greek; "non est imaginum structura pictorum inventio sed ecclesiæ catholicæ probata legislatio et traditio." In Spain, the sacro-pictorial law, under the title of *Pictor Christianus*, was promulgated, in 1730, by Fray Juan de Ayala, a monk of the order of Mercy; and such subjects are discussed as the shape of the true cross; whether one or two angels should sit on the stone by the sepulchre? and whether the Devil should be drawn with horns and a tail? In the National Gallery of London there is a painting of the Holy Family by Benozzo Gozzoli, and Sir Charles L. Eastlake has permitted me to see a contract between the painter and his employer A.D. 1461, in which every figure is literally "made to order," its attitude bespoke, and its place in the composition distinctly agreed for. One clause, however, contemplates progress, and binds the painter to make the piece his chef d'œuvre—"che detta dipentura exceda ogni buona dipintura infino aqui facto per detto Benozzo."

[1] *Foë Koué Ki*, ch. xxxviii. p. 335.

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Amongst the most renowned of the Singhalese masters, was the King Detu Tissa, A.D. 330, "a skilful carver, who executed many arduous undertakings in painting, and taught it to his subjects. He modelled a statue of Buddha so exquisitely that he seemed to have been inspired; and for it he made an altar, and gilt an edifice inlaid with ivory."[1] Among the presents sent by the King of Ceylon (A.D. 459) to the Emperor of China, the *Tsih foo yuen kwei*, a chronicle compiled by imperial command, particularises a picture of Buddha.[2] The colours employed in decorating their temples are mixed in *tempera*, as were those used in the ancient paintings in Egypt; the claim of the Singhalese to the priority of invention in the mixture of colours with oil, is adverted to elsewhere.[3]

Sculpture.—In style Singhalese sculpture was even more conventional and less imaginative that their painting; since the subjects to which it was confined were almost exclusively statues of Buddha[4], and its efforts were mere repetitions of the three orthodox attitudes of the great archetype—*sitting*, as when in deep meditation, under the sacred Bo-tree; *standing*, as when exhorting his multitudinous disciples; and *reclining*, in the enjoyment of the everlasting repose of "nirwana." In each and all of these the details are identical; the length of the ears, the proportions of the arms, fingers, and toes; the colour of the eyes, and the curls of the hair[5] being repeated with wearisome iteration. To such

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[1] *Mahawanso*, ch. xxxvii. p. 242.

[2] B. li. p. 7.

[3] See the chapter on the Fine Arts, Vol. I. p. 490.

[4] Mention is made of a figure of an elephant (*Rajavali*, p. 242), and of a horse (*Mahawanso*, ch. xxxix. TURNOUR's manuscript translation), and a carved bull as amongst the ruins of Anarajapoora.

[5] M. ABEL REMUSAT has devoted a section of his *Mélanges Asiatiques*, 1825, vol. i. p. 100, to combating the conjecture of Sir W. JONES in his third Dissertation on the Hindus, drawn from the curled or rather the woolly hair represented in his statues, that Buddha drew his descent from an African origin. (*Works*, vol. i. p. 12.) Another ground for Sir W. JONES's conjecture was the *large ears* which are usually characteristic of the statues of Buddha. But it is curious that one of the peculiar fea-

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an extent were these multiplied, and with an adherence so rigid to the same recognised models, that the *Rajavali* ventures to ascribe to one king the erection of "seventy-two thousand statues of Buddha," an obvious error [1], but indicative, nevertheless, that the real amount must have been prodigious, in order to obtain credence for the exaggeration. Many other sovereigns are extolled in the national annals, who rendered their reigns illustrious by the multiplicity of statues which they placed in the temples. It was doubtless from this incessant study of one and the same figure, that the artists of Ceylon attained to a facility and superiority in producing statues of Buddha, that rendered them famous throughout the countries of Asia, in which his religion prevailed. The early historians of China speak in raptures of works of this kind, obtained from Singhalese sculptors in the fourth and fifth centuries; they were eagerly sought after by all the surrounding nations; and one peculiarity in their execution consisted in so treating the features, that "on standing at about ten paces distant they appeared truly brilliant, but the lineaments gradually disappeared on a nearer approach." [2]

The labours of the sculptor and painter were combined in producing these images of Buddha, which are always coloured in imitation of life, each tint of his complexion and hair being in religious conformity with divine authority, and the ceremony of "painting of the eyes," [3] is always observed by the devout Buddhists as a solemn festival.

Many of the works which were thus executed were either golden [4] or gilt, with brilliants inserted in the

tures ascribed to the Singhalese by the early Greek writers was the possession of pendulous ears, possibly occasioned by their heavy ear-rings.

[1] *Rajavali*, p. 255. Most of these were built of terra-cotta and cement covered with chunam, preparatory to being painted. See p. 478.

[2] *Wei shoo*, a "History of the Wei Tartar Dynasty," written A.D. 590. B. cxiv. p. 9.

[3] *Mahawanso*, ch. lxxii.; UPHAM's version, vol. i. p. 275.

[4] *Mahawanso*, ch. xxx. pp. 180, 182; *Rajaratnacari*, pp. 47, 48; *Rajavali*, p. 237.

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eyes, and the draperies enriched with jewels.[1] FA HIAN in the 4th century, speaks of a figure of Buddha upwards of twenty-three feet in height, formed out of blue jasper, and set with precious stones, that sparkled with singular splendour, and which bore in its right hand a pearl of priceless value.[2] This may possibly have been the statue of which the *Mahawanso* speaks in like terms of admiration: "the eye formed by a jewel from the royal head-dress, each curl of the hair by a sapphire, and the lock in the centre of the forehead by threads of gold.[3]

Ivory also and sandal-wood[4], as well as copper and bronze, served as materials for statues; but granite was the substance most generally selected, except in the rare instances where the temple and the statue together were hewn out of the living rock, on which occasions gneiss was most generally selected. Such are the statues at Pollanarrua, at Mihintala, and at the Aukana Wihara, near Wijittapoora. A still more common expedient, which is employed to the present time, was to form the figures of Buddha with pieces of burnt clay joined together by cement; and coated with highly polished chunam, in order to prepare the surface for the painter. In this manner were most probably produced the "seventy-two thousand statues" ascribed to Mihindo V.

Figures of elephants were similarly formed at an early period.[5] An image of Buddha so composed in the 12th century, is still standing at Pollanarrua[6], and every

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[1] *Mahawanso*, ch. xxxviii. p. 258.

[2] "Parmi toutes les choses precieuses qu'on y voit, il n'y a une image de jaspe bleu haute de deux *tchang*: tout son corps est formé des sept choses précieuses; elle est étincellante de splendeur et plus majesteuse qu'on ne saurait l'exprimer. Dans la main droite elle tient une perle d'un prix inestimable."—*Foě Kouě Ki*, ch. xxxviii. p. 333.

[3] A.D. 459. *Mahawanso*, ch. xxxviii. p. 258. Another statue of gold, with the features and members appropriately coloured in gems, is spoken of in the second century B.C. (*Mahawanso*, ch. xxx. p. 180.)

[4] *Rajaratnacari*, p. 72.

[5] A.D. 432. *Rajaratnacari*, p. 74.

[6] Possibly the "standing figure of Buddha" mentioned in the *Rajavali*, p. 253.

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temple has one or more effigies, either sedent, erect, or recumbent, carefully modelled in cemented clay, and coloured after life.

Architecture.—In Ceylon, as in Egypt, Assyria, and India, the ruins which survive to attest the character of ancient architecture are exclusively sacred, with the exception of occasional traces of the residences of theocratic royalty; but everything has perished which could have afforded an idea of the dwellings and domestic architecture of the people. The cause of this is to be traced in the perishable nature of the sun-dried clay, of which the walls of the latter were composed. Added to this, in Ceylon there were the pride of rank and the pretensions of the priesthood, which, whilst they led to lavish expenditure of the wealth of the kingdom upon palaces and monuments, and the employment of stone in the erection of temples [1] and monasteries, forbade the people to construct their dwellings of any other material than sun-baked earth.[2] This practice continued to the latest period; and nothing struck the British army of occupation with more surprise on entering the city of Kandy, after its capture in 1815, than to find the palaces and temples alone constructed of stone, whilst the streets and private houses were formed of mud and thatch.

Though stone is abundant in Ceylon, it was but sparingly used in the ancient buildings. Squared stones[3] were occasionally employed, but large slabs seldom occur, except in the foundations of dagobas. The vast quantity of material required for such structures, the cost of quarrying and carriage, and the want of mechanical aids to raise ponderous blocks into position, naturally led to the substitution of bricks for the upper portion of the superstructure.

There is evidence to show that wedges were employed

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[1] *Rajaratnacari*, pp. 78, 79.
[2] *Rajavali*, p. 222.
[3] *Rajavali*, p. 210; VALENTYN, *Oud en Nieuw Oost-Indien*, ch. iii. p. 45.

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in detaching the blocks in the quarry, and the amount of labour devoted to the preparation of those in which strength, irrespective of ornament, was essential, is shown in the remains of the sixteen hundred undressed pillars[1] which supported the Brazen Palace at Anarajapoora, and in the eighteen hundred stone steps, many of them exceeding ten feet in length, which led from the base of the mountain to the very summit of Mihintala. A single piece of granite lies at Anarajapoora hollowed into an "elephant trough," with ornamental pilasters, which measures ten feet in length by six wide and two deep; and amongst the ruins of Pollanarrua a still more remarkable slab, twenty-five feet in length by six broad and two feet thick, bears an inscription of the 12th century, which records that it was brought from a distance of more than thirty miles.

The majority of the columns at Anarajapoora are of dressed stone, octangular and of extremely graceful proportions. They were used in profusion to form circular colonnades around the principal dagobas, and the vast numbers which still remain upright, are one of the peculiar characteristics of the place, and justify the expression of KNOX, when, speaking of similar groups elsewhere, he calls them a "world of hewn stone pillars."[2]

COLUMN AT ANARAJAPOORA.

Allusions in the *Mahawanso* show that extreme care was taken in the preparation of bricks for the dagobas.[3] Major SKINNER, whose official duties as engineer to the government have rendered him familiar with all parts of Ceylon, assures me that the bricks in

[1] The *Rajavali* states that these rough pillars were originally covered with copper, p. 222.

[2] KNOX, *Relation*, vol. v. pt. iv. ch. ii. p. 165.

[3] *Mahawanso*, ch. xxviii. p. 165; ch. xxix. p. 169, &c.

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every ruin he has seen, including the dagobas at Anarajapoora, Bintenne, and Pollanarrua, have been fired with so much skill that exposure through successive centuries has but slightly affected their sharpness and consistency.

The sand for mortar was "pounded, sifted, and ground on a grinding-stone;"[1] the "cloud-coloured stones,"[2] used to form the immediate receptacle in which the sacred relic was enclosed, were said to have been imported from India; and the "nawanita" clay, in which these were imbedded, was believed to have been brought from the mythical Anotattho lake in the Himalayas.[3]

Dagobas.—The process of building the Ruanwellé dagoba is thus minutely described in the *Mahawanso:* "That the structure might endure for ages, a foundation was excavated to the depth of one hundred cubits, and the round stones were trampled by enormous elephants, whose feet were protected by leather cases. Over this the monarch spread the sacred clay, and on it laid the bricks, and over them a coating of astringent cement, above this a layer of sand-stones, and on all a plate of iron. Over this was a large pholika (crystallised stone), then a plate of brass, eight inches thick, embedded in a cement made of the gum of the wood-apple tree, diluted in the water of the small red coco-nut."[4]

The shape of these huge mounds of masonry was originally hemispherical, being that best calculated to prevent the growth of grass or other weeds on objects so

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[1] *Mahawanso,* ch. xxx. p. 175.

[2] The "cloud-coloured stone" may possibly have been marble, but no traces of marble have been found in the ruins. Diodorus, in describing some of the monuments of Egypt alludes to a "party-coloured" stone, λίθον ποικίλον, which likewise remains without identification.—*Diodorus,* l. i. c. lvii.

[3] *Mahawanso,* ch. xxix. p. 169; ch. xxx. p. 179.

[4] *Mahawanso,* ch. xxix. p. 169; ch. xxx. p. 178. The internal structure of the Sanchi tope at Bilsah in Central India presents the arrangement here described, *the bricks being laid in mud,* but externally it is faced with dressed stone.

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sacred. Dutugaimunu, according to the *Mahawanso*, when about to build the Ruanwellé dagoba, consulted a mason as to the most suitable form, who, "filling a golden dish with water, and taking some in the palm of his hand, caused a bubble in the form of a coral bead to rise on the surface; and he replied to the king, 'In this form will I construct it.'"[1]

Two dagobas at Anarajapoora, the Abay-a-giri and Jeyta-wana-rama, still retain their original outline,—the Ruanwellé, from age and decay, has partly lost it,—and the Thupa-ramaya is flattened on the top as if suddenly brought to a close, and the Lanka-ramaya is shaped like a bell.

Monasteries and Wiharas.—According to the annals of Ceylon the construction of dwellings for the devotees of Buddha preceded the erection of temples for his worship. Originally the anchorite selected a cave or some shelter in the forest as his place of repose or meditation.[2] In the *Rajavali* Devenipiatissa is said to have "caused caverns to be cut in the solid rock at the sacred place of Mihintala;"[3] and these are the earliest residences for the higher orders of the priesthood in Ceylon, of which a record has been preserved. A less costly substitute was found in the erection of detached huts of the rudest construction, in which may be traced the embryo of the Buddhist monastery; and the king Walagambahu was the first, B.C. 89, to gather these scattered residences into groups and "build wiharas in unbroken ranges, conceiving that thus their repairs would be more easily effected."[4]

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[1] *Mahawanso*, ch. xxx. p. 175. This legend as to the origin of the semicircular form of the dagoba is at variance with the conjecture of Major FORBES, that these vast structures were merely an advance on the mounds of earth similar to the barrow of Halyattes, which, in the progress of the constructive arts, came to be converted into brickwork.—*Eleven Years in Ceylon*, v. i. p. 222.

[2] *Mahawanso*, c. xxx. p. 174.

[3] *Rajavali*, p. 184.

[4] *Mahawanso*, ch. xxxiii. p. 207.

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Simplicity and retirement were at all times the characteristics of these retreats, which rarely aspired to architectural display; and the only recorded instance of extravagance in this particular was the "Brazen Palace" at Anarajapoora, with its sixteen hundred columns; an edifice which, though nominally a dwelling for the priesthood, appears to have been in reality a vast suite of halls for their assemblies and festivals, and a sanctuary for the safe custody of their jewels and treasure.[1]

Allusions are occasionally made to other edifices more or less fantastic in their design and structure, such as "an apartment built on a single pillar,"[2] a "house of an octangular form," built in the 12th century[3], and another of an "oval," shape[4], erected by Prakrama I.

Palaces. — The royal residences as they were first constructed, must have consisted of very few chambers, since mention is made in the *Mahawanso* of the earliest which contained "many apartments," having been built by Pandukabhaya, B.C. 437.[5] But within two centuries afterwards, Dutugaimunu conceived the magnificent idea of the Loha Pasada, with its quadrangle one hundred cubits square, and a thousand dormitories with ornamental windows.[6] This palace was in its turn surpassed by the castle of Prakrama I. at Pollanarrua, which, according to the *Mahawanso*, "was seven stories high, consisting of five thousand rooms, lined

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[1] *Mahawanso*, ch. xxvii. p. 163. Like the "nine-storied" pagodas of China, the palace of "the Lowa Maya Paya" was originally *nine stories* in height, and Fergusson, from the analogy of Buddhist buildings in other countries, supposes that these diminished in succession as the building arose, till the outline of the whole assumed the form of a pyramid. (*Handbook of Architecture*, b. i. ch. iii. p. 44.) In this he is undoubtedly correct, and a building still existing, though in ruins, at Pollanarrua, and known as the *Sat-mal-pasado*, or the "*seven-storied palace*," probably built by Prakrama, about the year 1170, serves to support his conjecture. See a description of it, part x. ch. i. vol. ii.

[2] B.C. 504, *Mahawanso*, ch. ix. p. 56; ch. lxxii. UPHAM'S version, p. 274.

[3] *Rajaratnacari*, p. 105.

[4] *Mahawanso*, ch. lxxii. UPHAM'S version, p. 274.

[5] *Ibid.*, ch. x. p. 66.

[6] *Ibid.*, ch. xxvii. p. 163.

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with hundreds of stone columns, and outer halls of an oval shape, with large and small gates, staircases, and glittering walls."[1]

In what now remains of these buildings at Anarajapoora, there is no trace to be found of an arch, truly turned and secured by its keystone; but at Pollanarrua there are several examples of the false arch, produced by the progressive projection of the layers of brick.[2]

The finest specimens of ancient brickwork are to be seen amongst the ruins of the latter city, where the material is compact and smooth, and the edges sharp and unworn. The mortar shows the remains of the pearl oyster-shells from which it was burnt, and the chunam with which the walls were coated, still clings to some of the towers, and retains its angularity and polish.[3]

Of the details of external and internal decoration applied to these buildings, descriptions are given which attest a perception of taste, however distorted by the exaggerations of oriental design. "Gilded tiles"[4] in their bright and sunny atmosphere, must have had a striking effect, especially when surmounting walls decorated with beaded mouldings, and festooned with "carvings in imitation of creeping plants and flowers."[5]

Carving in stone.—Carving appears to have been practised at a very early period with singular success; but in later times it became so deteriorated, that there is little difficulty at the present day, in pronouncing on the superiority of the specimens remaining at Anarajapoora, over those which are to be found amongst the ruins of the later capitals, Pollanarrua, Yapahu, or Kornegalle. The author of the *Mahawanso* dwells

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[1] *Mahawanso*, ch. lxxii. UPHAM'S version, p. 274.

[2] FORBES'S *Eleven Years in Ceylon*, vol. i. ch. xvii. p. 414.

[3] Expressions in the *Mahawanso*, ch. xxvii. p. 164, show that as early as the 2nd century, B.C., the Singhalese were acquainted with this beautiful cement, which is susceptible of a polish almost equal to marble.

[4] *Rajavali*, p. 73.

[5] *Mahawanso*, ch. lxxii. p. 274.

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with obvious satisfaction on his descriptions of the "stones covered with flowers and creeping plants."[1] Animals are constantly introduced in the designs executed on stone, and a mythical creature, called technically *makara-torana*, is conspicuous, especially on doorways and balustrades, with the head of an elephant, the teeth of a crocodile, the feet of a lion, and the tail of a fish.

At the entrance to the great wihara, at Anarajapoora, there is now lying on the ground a semi-circular slab of granite, the ornaments of which are designed in excellent taste, and executed with singular skill; elephants, lions, horses, and oxen, forming the outer border; that within consisting of a row of the "hanza," or sacred goose; a bird that is equally conspicuous on the vast tablet, one of the wonders of Pollanarrua, before alluded to.[2]

Taken in connection with the proverbial contempt for the supposed stolidity of the *goose*, there is something still unexplained in the extraordinary honours paid to it by the ancients, and the veneration in which it is held to the present day by some of the eastern nations. The figure that occurs so frequently on Buddhist monuments, is the Brahmanee goose (*casarka rutila*), which is not a native of Ceylon; but from time immemorial has been an object of veneration there and in all parts of India. Amongst the Buddhists especially, impressed as they are with the solemn obligation of solitary retirement for meditation, the hanza has attracted attention by its periodical migrations, which are supposed to be directed to the holy Lake of Manasa, in the mythical regions of the Himalaya. The poet Kalidas, in his *Cloud Messenger*, speaks of the hanza as "eager to set out for the

[1] *Mahawanso*, ch. lxxii. p. 274, UPHAM'S version.

[2] A sketch of this stone will be seen in the engraving of the Sat-mal-prasada, in the account of Pollanarrua. Part I. ch. i. vol. ii.

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Sacred Lake." Hence, according to the *Rajavali*, the lion was pre-eminent amongst beasts, "the *hanza* was king over all the feathered tribes."[1] In one of the Jatakas, which contains the legend of Buddha's apotheosis, his hair, when suspended in the sky, is described as resembling "the beautiful Kala hanza."[2] The goose is, at the present day, the national emblem emblazoned on the standard of Burmah, and the brass weights of the Burmese are generally cut in the shape of the sacred bird, just as the Egyptians formed their weights of stone after the same model.[3]

FROM THE BURMESE STANDARD.

Augustine, in his *Civitas Dei*, traces the respect for the goose, displayed by the Romans, to their gratitude for the safety of the capital; when the vigilance of this bird defeated the midnight attack by the Goths. The adulation of the citizens, he says, degenerated afterwards almost to Egyptian superstition, in the rites instituted in honour of their preservers on that occasion.[4] But the very fact that the geese which saved the citadel were already sacred to Juno, and domesticated in her temple, demonstrates the error of Augustine, and shows that they had acquired mythological eminence, before

[1] *Rajavali*, p. 149. The *Mahawanso*, ch. xxx. p. 179, also speaks of the "*hanza*," as amongst the decorations chased on the stem of a bo-tree, modelled in gold, which was deposited by Dutugaimunu when building the Ruanwellé dagoba at Anarajapoora in the 2nd century before Christ.

[2] Hardy's *Buddhism*, ch. vii. p. 161.

[3] See Syme's *Embassy to Ava*, p. 330; Yule's *Narrative of the British Mission to Ava in* 1855, p. 110. I have seen a stone in the form of a goose, found in the ruins of Nineveh, which appears to have been used as a weight.

[4] "And hereupon did Rome fall almost into the superstition of the Ægyptians that worship birds and beasts, for they *henceforth* kept a holy day which they call the *goose's feast*."—Augustine, *Civitas Dei, &c.* book ii. ch. 22: Englished by F. H. Icond. 1610.

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achieving political renown. It must be observed, too, that the birds which rendered that memorable service, were the ordinary white geese of Europe [1], and not the red goose of the Nile (the χηναλώπηξ of Herodotus), which, ages before, had been enrolled amongst the animals held sacred in Egypt, and which formed the emblem of Seb, the father of Osiris.[2] HORAPOLLO, endeavouring to account for this predilection of the Egyptians (who employed the goose hieroglyphically to denote *a son*), ascribes it to their appreciation of the love evinced by it for its offspring, in exposing itself to divert the attention of the fowler from its young.[3] This opinion was shared by the Greeks and the Romans. Aristotle praises its sagacity; Ælian dilates on the courage and cunning of the "vulpanser," and its singular attachment to man [4]; and Ovid ranks the goose as superior to the dog in the scale of intelligence,—

> "Soliciti canes canibusve sagacior anser."
> OVID. *Met.* xi. 399.

The feeling appears to have spread westward at an early period; the ancient Britons, according to Cæsar, held it impious to eat the flesh of the goose [5], and the followers of the first crusade which issued from

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[1] This appears from a line of Lucreti :

> "Romulidarum arcis servator *candidus* anser."
> *De Rer. Nat.* l. iv. 687.

[2] SIR GARDNER WILKINSON'S *Manners and Customs*, &c., 2nd Ser. pl. 31, fig. 2, vol. i. p. 312; vol. ii. p. 227. Mr. Birch of the British Museum informs me that throughout the ritual or hermetic books of the ancient Egyptians a mystical notion is attached to the goose as one of the creatures into which the dead had to undergo a transmigration. That it was actually worshipped, is attested by a sepulchral tablet of the 26th dynasty, about 700 B.C., in which it is figured standing on a small chapel over which are the hieroglyphic words, "*The good goose greatly beloved;*" and on the lower part of the tablet the dedicator makes an offering of fire and water to "*Ammon and the Goose.*"—*Revue Archæo.*, vol. ii. pl. 27.

[3] HORAPOLLO, *Hieroglyphica*, lib. i. 23.

[4] ÆLIAN, *Nat. Hist.*, lib. v. c. 29, 30, 50. Ælian says that the Romans in recognition of the superior vigilance of the goose on the occasion of the assault on the Capitol, instituted a procession in the Forum in honour of the goose, whose watchfulness was incorruptible; but held an annual denunciation of the inferior fidelity of the dogs, which allowed themselves to be silenced by meat flung to them by the Gauls.—*Nat. Hist.* lib. xii. ch. xxxiii.

[5] "Anserem gustare fas non putant."—CÆSAR, *Bell. Gall.*, lib. v. ch. xii.

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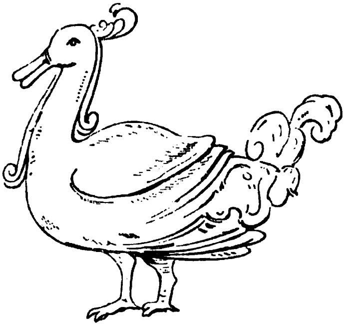
England, France, and Flanders, adored a goat and *a goose*, which they believed to be filled by the Holy Spirit.[1]

It is remarkable that the same word appears to designate the goose in the most remote quarters o the globe. The Pali term "*hanza*," by which it was known to the Buddhists of Ceylon, is still the "*henza*," of the Burmese and the "*gangsa*," of the Malays, and is to be traced in the "χην" of the Greeks, the "*anser*" of the Romans, the "*ganso*" of the Portuguese, the "*ansar*" of the Spaniards, the "*gans*" of the Germans, (who, PLINY says, called the white geese *ganza*), the "*gas*" of the Swedes, and the "*gander*" of the English.[2]

In the principal apartment of the royal palace at Kandy, now the official residence of the chief civil officer in charge of the province, the sacred bird occurs amongst the decorations, but in such shape as to resemble the dodo rather than the Brahmanee goose.



IN THE PALACE AT KANDY.

In the generality of the examples of ancient Singhalese carvings that have come down to us, the character-

[1] MILL'S *Hist. of the Crusades*, vol. i. ch. ii. p. 75. Forster has suggested that it was a species of goose (which annually migrates from the Black Sea towards the south) that fed the Israelites in the desert of Sinai, and that the "winged fowls" meant by the word *salu*, which has been heretofore translated "quails," were "red geese," resembling those of Egypt and India. He renders one of the mysterious inscriptions which abound in the Wady Mokatteb (*the Valley of Writings*), "the red geese ascend from the sea, — lusting the people eat to repletion;" thus presenting a striking concurrence with the passage in Numb. xi. 31., "there went forth a wind from the Lord and brought quails (*salu*) from the sea."— FORSTER'S *One Primeval Language*, vol. i. p. 90.

[2] HARDY observes that the ibis of the Nile is called "*Abou-Hanza*" by the Arabs, *Buddhism*, ch. i. p. 17; but BRUCE (*Trav.* vol. v. p. 172) says the name is *Abou Hannes* or *Father John*, and that the bird always appears on St. John's day: he implies, however, that this is probably a corruption of an ancient name now lost.

istic which most strongly recommends them, is their careful preservation of the outline and form of the article decorated, notwithstanding the richness and profusion of the ornaments applied. The subjects engraved are selected with so much judgment, that whilst elaborately covering the surface, they in no degree mar the configuration. Even in later times this principle has been preserved, and the chasings in silver and tortoise shell on the scabbards of the swords of state, worn by the Kandyan kings and their attendants, are not surpassed by any specimens of similar workmanship in India.

Temples.—The temples of Buddha were at first as unpretending as the residences of the priesthood. No mention is made of them during the infancy of Buddhism in Ceylon; at which period caves and natural grottoes were the only places of devotion. In the sacred books these are spoken of as "stone houses"[1] to distinguish them from the "houses of earth"[2] and other materials used in the construction of the first buildings for the worship of Buddha; such temples having been originally confined to a single chamber of the humblest dimensions, within which it became the custom at a later period to place a statue of the divine teacher reclining in dim seclusion, the gloom being increased to heighten the scenic effect of the ever-burning lamps by which the chambers are imperfectly lighted.

The construction of both these descriptions of temples was improved in later times, but no examples remain of the ancient chaityas or built temples in Ceylon, and those of the rock temples still existing,

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[1] The King, Walagambahu, who in his exile had been living amongst the rocks in the wilderness, ascended the throne after defeating the Malabars (B.C. 104), and "caused *the houses of stone or caves of the rocks* in which he had taken refuge to be made more commodious."—*Rajavali*, p. 224.

[2] *Rajavali*, p. 222.

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exhibit a very slight advance beyond the rudest attempts at excavation.

On examining the cave temples of continental India, they appear to exhibit three stages of progress,—first mere unadorned cells, like those formed by Dasartha, the grandson of Asoca, in the granite rocks of Behar, about B.C. 200; next oblong apartments with a verandah in front, like that of Ganesa, at Cuttack; and lastly, ample halls with colonnades separating the nave from the aisles, and embellished externally with façades and agricultural decorations; such are the caves of Karli, Ajunta, and Ellora.[1] But in Ceylon, the earliest rock temples were merely hollows beneath overhanging rocks, like those still existing at Dambool, and the Aluwihara at Matelle, in both of which advantage has been taken of the accidental shelter of rounded boulders, and an entrance constructed by applying a façade of masonry, devoid of all pretensions to ornament.

The utmost effort at excavation never appears to have advanced beyond the second stage attained in Bengal,—a small cell with a few columns to support a verandah in front; and even of this but very few examples now exist in Ceylon, the most favourable being the Gal-wihara at Pollanarrua, which, according to the *Rajavali*, was executed by Prakrama I., in the 12th century.[2]

Taking into consideration the enthusiasm exhibited by the kings of Ceylon, and the munificence displayed by them in the exaltation and extension of Buddhism, their failure to emulate the labours of its patrons in India, must be accounted for by the intractable nature of the rocks with which they had to contend, the

[1] See FERGUSSON'S *Illustrations of the Rock-cut Temples of India*, Lond. 1845, and *Handbook of Architecture*, ch. ii. p. 23.

[2] *Mahawanso*, ch. lxxvii.

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gneiss and quartz of Ceylon being less favourable to such works than the sandstone of Cuttack, or the trap formations of the western ghauts.

Oil-painting. — In decorative art, carving and moulding in chunam were the principal expedients resorted to. Of this substance were also formed the "beads resplendent like gems;" the "flower-ornaments" resembling gold; and the "festoons of pearls," that are more than once mentioned in describing the interiors of the palaces.[1] Externally, painting was applied to the dagobas alone, as in the climate of Ceylon, exposure to the rains would have been fatal to the duration of the colours, if only mixed in tempera; but the Singhalese, at a very early period, were aware of the higher qualities possessed by some of the vegetable oils. The claim of Van Eyck to the invention of oil-painting in the 15th century, has been shown to be untenable. Sir Charles L. Eastlake[2] has adduced the evidence of Ætius of Diarbekir, to prove that the use of oil in connection with art[3] was known before the 6th century; and Dioscorides, who wrote in the age of Augustus, has been hitherto regarded as the most ancient authority on the drying properties of walnut, sesamum, and poppy. But the *Mahawanso* affords evidence of an earlier knowledge, and records that in the 2nd century before Christ, "vermilion paint mixed with tila oil,"[4] was employed in the building of the Ruanwellé dagoba. This is, therefore, the earliest testimony extant of the use of oil

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[1] *Mahawanso,* ch. xxvii. p. 163.

[2] EASTLAKE'S *Materials for a History of Oil Painting,* ch. i. p. 18.

[3] Ætius Βιβλίον ἰατρικόν.

[4] Tila or tala is the Singhalese name for sesamum from which the natives express the gingeli oil. SIR CHARLES L. EASTLAKE is of opinion that "sesamum cannot be called a drying oil in the ordinary acceptation of the term," but in this passage of the *Mahawanso,* it is mentioned as being used as a cement. A question has been raised in favour of the claim of the Egyptians to the use of oil in the decoration of their mummy cases, but the probability is that they were coloured in tempera and their permanency afterwards secured by a *varnish.*

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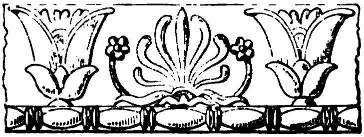
as a medium for painting, and till a higher claimant appears, the distinction of the discovery may be permitted to rest with the Singhalese.

Style of Ornament. — In decorating the temporary tee, which was placed in the same dagoba, prior to its completion, the square base was painted with a design representing vases of flowers in the four panels, surrounded by "ornaments radiating like the five fingers."[1] This description points to the "honeysuckle border," which, according to Fergusson, was adopted and carried westward by the Greeks, and eastward by the Buddhist architects.[2] It appears upon the lat column at Allahabad, which is inscribed with one of the edicts of Asoca, issued in the 3rd century before Christ.

The spire itself was "painted with red stick-lac," probably the same preparation of vermilion as is used at the present day on the lacquered ware of Burmah, Siam, and China.[3] Gaudy colours appear at all times to have been popular; yellow, from its religious associations, pre-eminently so[4]; and red lead was applied to the exterior of dagobas.[5] Bujas Raja, in the



FROM THE CAPITAL OF A LAT.

[1] *Mahawanso*, ch. xxxii. p. 193; ch. xxxviii. p. 258.

[2] FERGUSSON'S *Handbook of Architecture*, vol. i. ch. ii. p. 7.

[3] A species of lacquer painting is practised with great success at the present day in the Kandyan provinces, and especially at Matelle, the colours being mixed with a resinous exudation collected from a shrub called by the Singhalese Wæl-kœppetya (*croton lacciferum*). The coloured varnish thus prepared is formed into films and threads chiefly by aid of the thumb-nail of the left hand, which is kept long and uncut for the purpose. It is then applied by heat and polished. It is chiefly employed in ornamenting the covers of books, walking-sticks, the shafts of spears, and the handles of fans for the priesthood. The Burmese artists who make the japanned ware of Ava, *use the hand* in laying on the lacquer — which there, too, as well as in China, is the produce of a tree, the *melanorhœa glabra* of Wallich.

[4] *Rajaratnacari*, p. 184.

[5] *Mahawanso*, ch. xxxiv. p. 212.

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4th century, painted the walls and roof of the Brazen Palace blue [1], and built a sacred edifice at Anarajapoora, which from the variety and brilliancy of the colours with which he ornamented the exterior, was known as the Monara Paw Periwena or Temple of the Peacock.[2]

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[1] *Rajavali*, p. 291. The *blue* used for this purpose was probably a preparation of indigo; the red, vermilion; the yellow, orpiment; and green was obtained by combining the first and last.

[2] *Rajavali*, p. 73.

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CHAP. VIII.

DOMESTIC LIFE.

CITIES. — *Anarajapoora.* — Striking evidences of the state of civilisation in Ceylon are furnished by the descriptions given, both by native writers and by travellers, of its cities as they appeared prior to the 8th century of the Christian era. The municipal organisation of Anarajapoora, in the reign of Pandukábhaya, B.C. 437, may be gathered from the notices in the *Mahawanso*, of the "*naggaraguttiko*," who was conservator of the city, of the "guards stationed in the suburbs," and of the "chandalas," who acted as scavengers and carriers of corpses. As a cemetery was attached to the city, interment must have frequently taken place, and the *nichi-chandalas* are specially named as the "cemetery men;"[1] but the practice of cremation prevailed in the 2nd century before Christ, and the body of Elala was burned on the spot where he fell, B.C. 161.[2]

The capital at that time contained the temples of numerous religions, besides public gardens, and baths; to which were afterwards added, halls for dancing and music, ambulance halls, rest-houses for travellers[3], alms-houses[4], and hospitals[5]; in which animals, as well as men, were tenderly cared for. The "corn of a thousand fields" was appropriated by one king for their use[6]; another

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[1] *Mahawanso*, ch. x. p. 65, 66.
[2] *Ibid.*, ch. xxv. p. 155.
[3] These rest-houses, like the Choultries of India, were constructed by private liberality along all the leading highways and forest roads. "Oh that I had in the wilderness a lodging-place of wayfaring men."—*Jer.* ix. 2.
[4] Rock inscription at Pollanarrua, A.D. 1187.
[5] *Rajaratnacari*, p. 39; *Mahawanso*, ch. x. p. 67; HARDY's *Eastern Monachism*, p. 485.
[6] *Mahawanso*, ch. lxviii. UPHAM's version, vol. i. p. 246.

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set aside rice to feed the squirrels which frequented his garden [1]; and a third displayed his skill as a surgeon in treating the diseases of elephants, horses, and snakes.[2] The streets contained shops and bazaars [3]; and on festive occasions, barbers and dressers were stationed at each of the gates, for the convenience of those resorting to the city.[4]

The *Lankawistariyaye*, or "Ceylon Illustrated," a Singhalese work of the 7th century, gives a geographical summary of the three great divisions of the island, Rohuna, Maya, and Pihiti, and dwells with obvious satisfaction on the description of the capital of that period. The details correspond so exactly with another fragment of a native author, quoted by Colonel Forbes [5], that both seem to have been written at one and the same period; they each describe the "temples and palaces, whose golden pinnacles glitter in the sky, the streets spanned by arches bearing flags, the side ways strewn with black sand, and the middle sprinkled with white, and on either side vessels containing flowers, and niches with statues holding lamps. There are multitudes of men armed with swords, and bows and arrows. Elephants, horses, carts, and myriads of people pass and repass, jugglers, dancers, and musicians of all nations, with chank shells and other instruments ornamented with gold. The distance from the principal gate to the south gate, is four gows; and the same from the north to the south gate. The principal streets are Moon Street, Great King Street, Hinguruwak, and Mahawelli Streets, — the first containing eleven thousand houses, many of them two stories in height. The smaller streets are innumerable. The palace has large ranges

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[1] *Mahawanso*, ch. xxxvii. p. 249.
[2] *Ibid.*, p. 244, 245.
[3] *Ibid.*, ch. xxiii. p. 139.
[4] *Ibid.*, ch. xxviii. p. 170; ch. xxxiv. p. 214.
[5] *Eleven Years in Ceylon*, vol. i. p. 235. But there is so close a resemblance in each author to the description of the ancient capital of the kings of Ayoudhya (Oude) that both seem to have been copied from that portion of the Ramayana. See the passage quoted in Mrs. SPIER's *Life in Ancient India*, ch. iv. p. 99.

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of buildings, some of them two and three stories high, and its subterranean apartments are of great extent."

The native descriptions of Anarajapoora, in the 7th century, are corroborated by the testimony of the foreign travellers who visited it about the same period. Fa Hian says, "The city is the residence of many magistrates, grandees, and foreign merchants; the mansions beautiful, the public buildings richly adorned, the streets and highways straight and level, and houses for preaching built at every thoroughfare." [1] The *Leang-shu*, a Chinese history of the Leang Dynasty, written between A.D. 507—509, describing the cities of Ceylon at that period, says, "The houses had upper stories, the walls were built of brick, and secured by double gates." [2]

Carriages and Horses. — Carriages [3] and chariots [4] are repeatedly mentioned as being driven through the principal cities, and carts and waggons were accustomed to traverse the interior of the country.[5] At the same time, the frequent allusions to the clearing of roads through the forests, on the approach of persons of distinction, serve to show that the passage of wheel carriages must have been effected with difficulty [6], along tracks prepared for the occasion, by freeing them of the jungle and brushwood. The horse is not a native of Ceylon, and those spoken of by the ancient writers must have been imported from India and Arabia. White horses were especially prized, and those mentioned with peculiar praises were of the "Sindhawo" breed, a term which may either imply the place whence

[1] *Foë-Koué-ki*, ch. xxxviii. p. 334.

[2] *Leang-shu*, B. liv. p. 10.

[3] B.C. 307, *Mahawanso*, ch. xiv. p. 80, 81; B.C. 204, *Ib.*, ch. xxi. p. 128. A carriage drawn by four horses is mentioned, B.C. 161, *Mahawanso*, ch. xxxi. p. 186.

[4] B.C. 307, *Mahawanso*, ch. xv. p. 84; ch. xvi. p. 103.

[5] B.C. 161, "a merchant of Anarajapoora proceeded with carts to the Malaya division near Adam's Peak to buy ginger and saffron" (*Mahawanso*, ch. xxviii. p. 167); and in the 3rd century after Christ a wheel chariot was driven from the capital to the Kalaweva tank twenty miles N.W. of Dambool. — *Mahawanso*, ch. xxxviii. p. 260. See *ante*, Vol. II. p. 445.

[6] FORBES suggests that on such journeys the carriages must have been pushed by men, as horses could not possibly have drawn them in the hill country (vol. ii. p. 86).

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they were brought, or the swiftness of their speed.[1] In battle the soldiers rode chargers [2], and a passage in the *Mahawanso* shows that they managed them by means of a rope passed through the nostril, which served as a bridle.[3] Cosmas Indicopleustes, who considered the number of horses in Ceylon in the 6th century to be a fact of sufficient importance to be recorded, adds that they were imported from Persia, and the merchants bringing them were treated with special favour and encouragement, their ships being exempted from all dues and charges. Marco Polo found the export of horses from Aden and Ormus to India going on with activity in the 13th century.[4]

Domestic Furniture. — Of the furniture of the private dwellings of the Singhalese, such notices as have come down to us serve to show that their intercourse with other Buddhist nations was not without its influence on their domestic habits. Chairs [5], raised seats [6], footstools [7], and metal lamps [8], were articles comparatively unknown to the Hindus, and were obviously imitated by the Singhalese from the East, from China, Siam, or Pegu.[9] The custom which prevails to the present day of covering a chair with a white cloth, as an act of courtesy in honour of a visitor, was observed with the same formalities two thousand years ago.[10] Rich beds [11] and woollen carpets [12] were in

[1] *Sighan*, swift; *dhawa*, to run; *Mahawanso*, ch. xxiii. p. 142, 186.

[2] *Mahawanso*, ch. xxii. p. 132; ch. xxiii. 142.

[3] The Prince Dutugaimunu, when securing the mare which afterwards carried him in the war against Elala, "seized her by the throat and boring her nostril with the point of his sword, secured her with his rope."— *Mahawanso*, ch. x. p. 60.

[4] *Marco Polo*, ch. xx. s. ii.; ch. xl.

[5] *Mahawanso*, ch. xiv. p. 80; ch. xv. p. 84; *Rajaratnacari*, p. 134.

[6] *Ibid.*, ch. xiii. p. 82.

[7] *Ibid.*, xxvii. p. 164.

[8] *Mahawanso*, ch. xxx. p. 182; ch. xxxii. p. 192.

[9] *Asiatic Researches*, vol. vi. p. 437. Chairs are shown on the sculptures of Persepolis; and it is probably a remnant of Grecian civilisation in Bactria that chairs are still used by the mountaineers of Balkh and Bokhara.

[10] B.C. 307, King Devenipiatissa caused a chair to be so prepared for Mahindo.

[11] *Mahawanso*, ch. xv. p. 84; ch. xxiii. p. 129. A four-post bed is mentioned B.C. 180. *Mahawanso*, ch. xxiv. p. 148.

[12] *Ibid.*, ch. xiv. p. 82.

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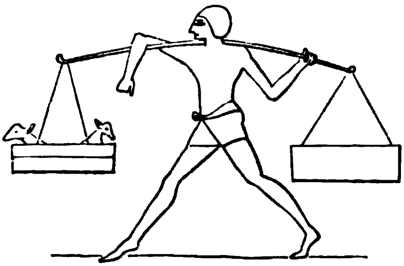
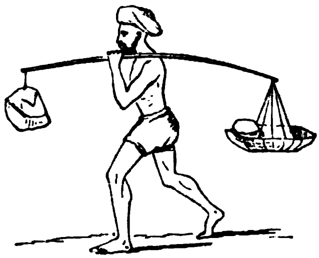
use at the same early period, and ivory was largely employed in inlaying the more sumptuous articles.[1] Coco-nut shells were used for cups and ladles[2]; earthenware for jugs and drinking cups[3]; copper for water-pots, oil-cans, and other utensils; and iron for razors, needles, and nail-cutters.[4] The *pingo*, formed of a lath cut from the stem of the areca, or the young coco-nut palm, and still used as a yoke in carrying burdens, existed at an early period[5], in the same form in which it is borne at the present day. It is identical with the *asilla*, an instrument for the same purpose depicted on works of Grecian art[6] and on the monuments of Egypt.



EGYPTIAN YOKE



SINGHALESE PINGO.

Form of Government. — The form of government was at all times an unmitigated despotism; the king had ministers, but only to relieve him of personal toil, and the institution of Gam-sabes, or village municipalities, which existed in every hamlet, however small, was merely a miniature council of the peasants, in which they settled all disputes about descent and proprietorship, and maintained the organisation essential to their peculiar tillage; facilitating at the same time the payment of dues to the crown, both in taxes and labour.

Revenue. — The main sources of revenue were taxes,

[1] *Mahawanso*, ch. xxvii. p. 163.

[2] *Ibid.*, ch. xxvii. p. 164.

[3] *Ibid.*, ch. xv. p. 85.

[4] *Rajaratnacari*, p. 134.

[5] *Ibid.*, p. 103. This implement is identical with the "yoke" so often mentioned in the Old and New Testament as an emblem of bondage and labour; and figured, with the same significance, on Grecian sculpture and gems. See *ante*, Vol. I. Pt. I. ch. iii. p. 114.

[6] ARISTOTLE, *Rhet.* i. 7.

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both on the land and its produce; and these were avowedly so oppressive in amount, that the merit of having reduced or suspended their assessment, was thought worthy of being engraved on rocks by the sovereigns who could claim it. In the inscription at the temple of Dambool, A.D. 1187, the king boasts of having "enriched the inhabitants who had become impoverished by inordinate taxes, and made them opulent by gifts of land, cattle, and slaves, by relinquishing the revenues for five years, and restoring inheritances, and by annual donations of five times the weight of the king's person in gold, precious stones, pearls, and silver; and from an earnest wish that succeeding kings should not again impoverish the inhabitants of Ceylon by levying excessive imposts, he fixed the revenue at a moderate amount, according to the fertility of the land."[1]

There was likewise an imperial tax upon produce, originally a tenth, but subject to frequent variation.[2] For instance, in consideration of the ill-requited toil of felling the forest land, in order to take a crop of dry grain, the soil being unequal to sustain continued cultivation, the same king seeing that "those who laboured with the bill-hook in clearing thorny jungles, earned their livelihood distressfully," ordained that this *chena* cultivation, as it is called, should be for ever exempted from taxation.

Army and Navy. — The military and naval forces of Ceylon were chiefly composed of foreigners. The genius of the native population was at all times averse to arms; from the earliest ages, the soldiers employed by the crown were mercenaries, and to this peculiarity may be traced the first encouragement given to the invasion of the Malabars. These were employed both on land and by sea in the third century before

[1] TURNOUR's *Epitome*, App. p. 95; *Mahawanso*, ch. xxxiv. p. 211.

[2] Rock inscription at Pollanarrua, A.D. 1187.

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Christ[1]; and it was not till the eleventh century of our era, that a marine was organised for the defence of the coast.[2]

The mode of raising a national force to make war against the invaders, is described in the *Mahawanso*[3]; the king issuing commands to ten warriors to enlist each ten men, and each of this hundred in turn to enrol ten more, and each of the new levy, ten others, till "the whole company embodied were eleven thousand one hundred and ten."

The troops usually consisted of four classes: the "riders on elephants, the cavalry, then those in chariots, and the foot soldiers[4]," and this organisation continued till the twelfth century.[5]

Their arms were "the five weapons of war," swords, spears, javelins, bows, and arrows, and a rope with a noose, running in a metal ring called *narachana.*[6] The archers were the main strength of the army, and their skill and dexterity are subjects of frequent eulogium.[7]

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[1] *Mahawanso,* ch. xxi. p. 127.

[2] *Ibid.,* ch. xxxix.; TURNOUR's MS. Trans. p. 269.

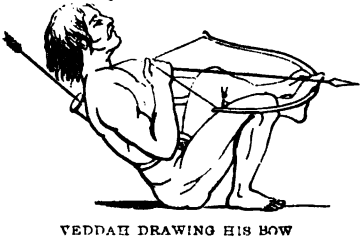
[3] *Ibid.,* ch. xxiii. p. 144.

[4] *Rajavali,* p. 208. The use of elephants in war is frequently adverted to in the *Mahawanso,* ch. xxv. p. 151—155, &c.

[5] See the inscription on the tablet at Pollanarrua, A.D. 1187.

[6] *Mahawanso,* ch. vii. 48; ch. xxv. p. 155.

[7] One of the chiefs in the army of Dutugaimunu, B.C. 160, is described as combining all the excellences of the craft, being at once a "sound archer," who shot by ear, when his object was out of sight; "a lightning archer," whose arrow was as rapid as a thunderbolt; and a "sand-archer," who could send the shaft through a cart filled with sand and through hides an hundred-fold thick."—*Mahawanso,* ch. xxiii. p. 143. In one of the legends connected with the early life of Gotama, before he attained the exaltation of Buddhahood, he is represented as displaying his strength by taking "a bow which required a thousand men to bend it, and placing it against the toe of his right foot without standing up, he drew the string with his finger-nail."—HARDY's *Manual of Buddhism,* ch. vii. p. 153. It is remarkable that at the present day this is the attitude assumed by a Veddah, when anxious to send an arrow with more than ordinary force. The following sketch is from a model in ebony executed by a native carver.



VEDDAH DRAWING HIS BOW

I am not aware that examples of this mode of drawing the bow are to

The *Rajaratnacari* states that the arrows of the Malabars were sometimes "drenched with the poison of serpents," to render recovery impossible.[1] Against such weapons the Singhalese carried shields, some of them covered with plates of the chank shell[2]; this shell was also sounded in lieu of a trumpet[3], and the disgrace of retreat is implied by the expression that it ill becomes a soldier to "*allow his hair to fly behind.*"[4]

Civil Justice. — Civil justice was entrusted to provincial judges[5]; but the King Kirti Nissanga, in the great tablet inscribed with his exploits, which still exists at Pollanarrua, has recorded that under the belief that "robbers commit their crimes through hunger for wealth, he gave them whatever riches they required, thus relieving the country from the alarm of their depredations."[6] Torture was originally recognised as a stage in the administration of the law, and in the original organisation of the capital in the fourth century before Christ, a place for its infliction was established adjoining the place of execution and the cemetery.[7] It was abolished in the third century by King Wairatissa; but the frightful punishments of impaling and crushing by elephants continued to the latest period of the Ceylon monarchy.

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be found on any ancient monument, Egyptian, Assyrian, Grecian, or Roman; but that it was regarded as peculiar to the inhabitants of India is shown by the fact that ARRIAN describes it as something remarkable in the Indians in the age of Alexander. "Ὁπλίσιος δὲ τῆς Ἰνδῶν οὐκ ὠϋτὸς εἷς τρόπος, ἀλλ' οἱ μὲν πεζοὶ αὐτοῖσι τόξον τε ἔχουσιν, ἰσόμηκες τῷ φορέοντι τὸ τόξον, καὶ τοῦτο κάτω ἐπὶ τὴν γῆν θέντες καὶ τῷ ποδὶ τῷ ἀριστερῷ ἀντιβάντες, οὕτως ἐκτοξεύουσι, τὴν νευρὴν ἐπὶ μέγα ὀπίσω ἀπαγαγόντες."—ARRIAN, *Indica*, lib. xvi. Arrian adds that such was the force with which their arrows travelled that no substance was strong enough to resist them, neither shield, breastplate, nor armour, all of which they penetrated. In the account of Brazil, by Kidder and Fletcher, Philad. 1856, p. 558, the Indians of the Amazon are said to draw the bow with the foot, and a figure is given of a Caboclo archer in the attitude, but, unlike the Veddah of Ceylon, the American uses both feet.

[1] *Rajaratnacari*, p. 101.

[2] *Rajavali*, p. 217.

[3] *Mahawanso*, ch. xxv. p. 154.

[4] *Rajavali*, p. 213.

[5] Inscriptions on the Great Tablet at Pollanarrua.

[6] *Ibid.*

[7] *Mahawanso*, ch. x. p. 66.

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CHAP. IX.

ASTRONOMY, ETC.

Education.—The Brahmans as they were the first to introduce the practice of the mechanical arts, were also the earliest instructors of youth in the rudiments of general knowledge. Pandukabhaya, who was afterwards king, was "educated in every accomplishment by Pandulo, a Brahman, who taught him along with his own son."[1] The Buddhist priests became afterwards the national instructors, and a passage in the *Rajavali* seems to imply that writing was regarded as one of the distinctive accomplishments of the priesthood, not often possessed by the laity, as it mentions that the brother of the king of Kalany, in the second century before Christ, had been taught to write by a tirunansi, "and made such progress that he could write as well as the tirunansi himself."[2] The story in the *Rajavali* of an intrigue which was discovered by "the sound of the fall of a letter," shows that the material then in use in the second century before Christ, was the same as at the present day, the prepared leaf of a palm tree.[3]

The most popular sovereigns were likewise the most sedulous patrons of learning. Prakrama I. founded schools at Pollanarrua[4]; and it is mentioned with due praise in the *Rajaratnacari*, that the King Wijayo Bahu III., who reigned at Dambeadinia, A.D. 1240, "established a school in every village, and charged the priests who superintended them to take nothing from

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1 *Mahawanso*, ch. x. p. 60.
2 *Rajavali*, p. 189.
3 *Ibid.*
4 *Mahawanso*, ch. lxxii. Upham's version, vol. i. p. 274.

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the pupils, promising that he himself would reward them for their trouble." [1]

Amongst the propagators of a religion whose leading characteristics are its subtlety and thin abstractions, it may naturally be inferred that argument and casuistry held a prominent place in the curriculum of instruction. In the story of Mahindo, and the conversion of the island to Buddhism, the following display of logical acumen is ostentatiously paraded as evidence of the highly cultivated intellect of the neophyte king.[2]

For the purpose of ascertaining the capacity of the gifted monarch, Mahindo thus interrogated him: —

"O king; what is this tree called?

"The Ambo.

"Besides this one, is there any other Ambo-tree?

"There are many.

"Besides this Ambo, and those other Ambo-trees, are there any other trees on the earth?

"Lord; there are many trees, but they are not Ambo-trees.

"Besides the other Ambo-trees, and the trees that are not Ambo, is there any other?

"Gracious Lord, *this Ambo-tree.*

"Ruler of men, thou art wise!

"Hast thou any relations, oh, king?

"Lord, I have many.

"King, are there any persons not thy relations?

"There are many who are not my relations.

"Besides thy relations, and those who are not thy relations, is there, or is there not, any other human being in existence?

"Lord, *there is myself.*

"Ruler of men, Sadhu! thou art wise."

The course of education suitable for a prince in the thirteenth century included what was technically termed the eighteen sciences: "1. oratory, 2. general

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[1] *Rajaratnacari*, p. 90.

[2] *Mahawanso*, ch. xiv. p. 79.

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knowledge, 3. grammar, 4. poetry, 5. languages, 6. astronomy, 7. the art of giving counsel, 8. the means of attaining *nirwana* [1], 9. the discrimination of good and evil, 10. shooting with the bow, 11. management of the elephant, 12. penetration of thoughts, 13, discernment of invisible beings, 14. etymology, 15. history, 16. law, 17. rhetoric, 18. physic." [2]

Astronomy.—Although the Singhalese derived from the Hindus their acquaintance, such as it was, with the heavenly bodies and their movements, together with their method of taking observations, and calculating eclipses,[3] yet in this list the term "astrology" would describe better than "astronomy" the science practically cultivated in Ceylon, which then, as now, had its professors in every village to construct horoscopes, and cast the nativities of the peasantry. Dutugaimunu, in the second century before Christ, after his victory over Elala, commended himself to his new subjects by his fatherly care in providing "a doctor, an astronomer, and a priest, for each group of sixteen villages throughout the kingdom;" [4] and he availed himself of the services of the astrologer to name the proper day of the moon on which to lay the foundation of his great religious structures.[5]

King Bujas Raja, A.D. 339, increased his claim to popular acknowledgment by adding "an astrologer, a devil-dancer, and a preacher." [6] At the present day the astronomical treatises possessed by the Singhalese are, generally speaking, borrowed, but with considerable variation from the Sanskrit.[7]

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[1] "Nirwana" is the state of suspended sensation, which constitutes the eternal bliss of the Buddhist in a future state.

[2] *Rajaratnacari*, p. 100.

[3] A summary of the knowledge possessed by the early Hindus of *astronomy* and *mathematical science* will be found in MOUNTSTUART ELPHINSTONE'S *History of India during the Hindu and Mahomedan Periods*, book iii. ch. i. p. 127.

[4] *Rajaratnacari*, p. 40.

[5] *Mahawanso*, ch. xxix. p. 169—173.

[6] TURNOUR'S *Epitome*, p. 27.

[7] HARDY'S *Buddhism*, ch. i. p. 22.

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Medicine.—Another branch of royal education was medicine. The Singhalese, from their intercourse with the Hindus, had ample opportunities for acquiring a knowledge of this art, which was practised in India before it was known either in Persia or Arabia; and there is reason to believe that the distinction of having been the discoverers of chemistry which has been so long awarded to the Arabs, might with greater justice have been claimed for the Hindus. In point of antiquity the works of Charak and Susruta on Surgery and Materia Medica, belong to a period long anterior to Geber, and the earliest writers of Arabia; and served as authorities both for them and the Mediæval Greeks.[1] Such was their celebrity that two Hindu physicians, Manek and Saleh, lived at Bagdad in the eighth century, at the court of Haroun al Raschid.[2]

One of the edicts of Asoca engraved on the second tablet at Girnar, relates to the establishment of a system of medical administration throughout his dominions, "as well as in the parts occupied by the faithful race as far as Tambaparni (Ceylon), both medical aid for men, and medical aid for animals, together with medicaments of all sorts, suitable for animals and men."[3]

These injunctions of the Buddhist sovereign of Magadha were religiously observed by many of the Ceylon kings. In the "register of deeds of piety" in which Dutugaimunu, in the second century before Christ, caused to be enrolled the numerous proofs of his devotion to the welfare of his subjects, it was recorded that the king had "maintained at eighteen different places, hospitals provided with suitable diet and medicines prepared by medical practitioners for the infirm."[4] In the second century of the Christian era, a physician

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[1] See Dr. ROYLE's *Essay on the Antiquity of Hindu Medicine*, p. 64.

[2] Professor Dietz, quoted by Dr. ROYLE.

[3] *Journal. Asiat. Soc. Bengal*, vol. vii. part i. p. 159.

[4] *Mahawanso*, ch. xxxii. p. 196.

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and a surgeon were borne on the establishments of the great monasteries[1], and even some of the sovereigns acquired renown by the study and practice of physic. On Bujas Raja, who became king of Ceylon, A.D. 339, the *Mahawanso* pronounces the eulogium, that he "patronised the virtuous, discountenanced the wicked, rendered the indigent happy, and comforted the diseased by providing medical relief."[2] He was the author of a work on Surgery, which is still held in repute by his countrymen; he built hospitals for the sick and asylums for the maimed, and the benefit of his science and skill was not confined to his subjects alone, but was equally extended to the relief of the lower animals, elephants, horses, and other suffering creatures.

Botany.—The fact that the basis of their *Materia Medica* has been chiefly derived from the vegetable kingdom, coupled with the circumstance that their clothing and food were both drawn from the same source, may have served to give to the Singhalese an early and intimate knowledge of plants. It was at one time believed that they were likewise possessed of a complete and general botanical arrangement; but MOON, whose attention was closely directed to this subject, failed to discover any trace of a system; and came to the conclusion that, although well aware of the various parts of a flower, and their apparent uses, they have never applied that knowledge to a distribution of plants by classes or orders.[3]

Geometry.—The invention of geometry has been ascribed to the Egyptians, who were annually obliged to ascertain the extent to which their lands had been affected by the inundations of the Nile, and to renew the obliterated boundaries. A similar necessity led to like proficiency amongst the people of India and

[1] Rock inscription at Mihintala, A.D. 262.

[2] *Mahawanso*, ch. xxxvii. p. 242—245.

[3] MOON's *Catalogue of Indigenous and Exotic Plants growing in Ceylon.* 4to. Colombo, 1824, p. 2.

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Ceylon, the minute subdivision of whose lands under their system of irrigation necessitated frequent calculations for the definition of limits and the division of the crops.[1]

Lightning Conductors.—In connection with physical science, a curious passage occurs in the *Mahawanso* which gives rise to a conjecture that early in the third century after Christ, the Singhalese had some dim idea of the electrical nature of lightning, and a belief, however erroneous, of the possibility of protecting their buildings by means of conductors.

The notices contained in THEOPHRASTUS and PLINY show that the Greeks and the Romans were aware of the quality of attraction exhibited by amber and tourmaline.[2] The Etruscans, according to the early annalists of Rome, possessed the power of invoking and compelling thunder storms.[3] Numa Pompilius would appear to have anticipated Franklin by drawing lightning from the clouds; and Tullus Hostilius, his successor, was killed by an explosion, whilst attempting unskilfully the same experiment.[4]

CTESIAS, a contemporary of Xenophon, spent much of his life in Persia, and says that he twice saw the king demonstrate the efficacy of an iron sword planted in the ground in dispersing clouds, hail, and lightning[5];

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[1] The "*Suriya Sidhanta*," generally assigned to the fifth or sixth century, contains a system of Hindu trigonometry, which not only goes beyond anything known to the Greeks, but involves theorems that were not discovered in Europe till the sixteenth century. — MOUNTSTUART ELPHINSTONE'S *India*, b. iii. ch. i. p. 129.

[2] The electrical substances "lyncurium" and "theamedes" have each been conjectured to be the "tourmaline" which is found in Ceylon.

[3] "Vel cogi fulmina vel impetrari." —PLINY, *Nat. Hist.* lib. ii. ch. lii.

[4] *Ibid.* There is an interesting paper on the subject of the knowledge of electricity possessed by the ancients, by DR. FALCONER in the *Memoirs of the Manchester Philosophical Society*, A. D. 1788, vol. iii. p. 279.

[5] PHOTIUS, who has preserved the fragment (*Bibl.* lxxii.), after quoting the story of CTESIAS as to the iron in question being found in a mysterious Indian lake, adds, regarding the sword, "*φησὶ δὲ περὶ αὐτοῦ ὅτι πηγνύμενος ἐν τῇ γῇ νέφους καὶ χαλάζης καὶ πρηστήρων ἐστὶν ἀποτρόπαιος. Καὶ ἰδεῖν αὐτὸν ταῦτα φησὶ βασιλέως δὶς ποιήσαντος.*" See BAEHR'S *Ctesiæ Reliquiæ, &c.*, p. 248, 271.

and the knowledge of conduction is implied by an expression of LUCAN, who makes Aruns, the Etrurian flamen, concentrate the flashes of lightning and direct them beneath the surface of the earth:—

> "dispersos fulminis ignes
> Colligit, et terræ mæsto cum murmure condit."
> *Phars.* lib. i. v. 606.

There is scarcely an indication in any work that has come down to us from the first to the fifteenth century, that the knowledge of such phenomena survived in the western world; but the books of the Singhalese contain allusions which demonstrate that in the *third* and in the *fifth* century it was the practice in Ceylon to apply mechanical devices with the hope of securing edifices from lightning.

The most remarkable of these passages occurs in connection with the following subject. It will be remembered that Dutugaimunu, by whom the great dagoba, known as the Ruanwellé, was built at Anarajapoora, died during the progress of the work, B.C. 137, the completion of which he entrusted to his brother and successor Saidaitissa.[1] The latest act of the dying king wås to form "the square capital on which the spire was afterwards to be placed[2], and on each side of this there was a representation of the sun."[3] The *Mahawanso* states briefly, that in obedience to his brother's wishes, Saidaitissa "completed the pinnacle,"[4] for which the square capital before alluded to served as a base; but the *Dipawanso*, a chronicle older than the *Mahawanso* by a century and a half, gives a minute account of this stage of the work, and says, that this pinnacle, which he erected between the years 137 and 119 before Christ, was formed *of glass*.[5]

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[1] *Mahawanso*, ch. xxxii. p. 198. See *ante*, Vol. I. P. III. ch. v. p. 358.
[2] *Ibid.*, ch. xxxi. p. 192.
[3] *Ibid.*, ch. xxxii. p. 193.
[4] *Ibid.*, ch. xxxiii. p. 200.
[5] "Karàpesi *khara-pindan* mahá thupè varuttamè." For this reference to the *Dipawanso* I am indebted to Mr. De Alwis of Colombo.

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A subsequent king, Amanda, A.D. 20, fixed a chatta (in imitation of the white umbrella which is emblematic of royalty) on the spire[1], and two centuries later Sanghatissa, who reigned A.D. 234 to 246, "caused the chatta to be gilt, and set four gems in the centre of the four emblems of the sun, each of which cost a lac."[2] And now follows the passage which is interesting from its reference, however obscure, to the electrical nature of lightning. The *Mahawanso* continues: "he in like manner placed a glass pinnacle on the spire *to serve as a protection against lightning*."[3]

The term "wajira-chumbatan" in the original Pali, which TURNOUR has here rendered "a glass pinnacle," ought to be translated "a diamond hoop," both in this passage and also in another in the same book in which it occurs.[4] The form assumed by the upper portion of the dagoba would therefore resemble the annexed sketch.

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[1] *Mahawanso*, ch. xxxv. p. 215.

[2] *Ibid.*, ch. xxxvi. p. 229.

[3] *Ibid.*, ch. xxxvi. p. 229. This belief in the power of averting lightning by mechanical means, prevailed on the continent of India as well as in Ceylon, and one of the early Bengalese histories of the temple of Juggernauth, written between the years A.D. 470 and A.D. 520, says that when the building was completed, "a *neelchukro* was placed at the top of the temple to prevent the falling of thunderbolts." In an account of the modern temple which replaced this ancient structure, it is stated that "it bore a loadstone at the top, which as it drew vessels to land was seized and carried off two centuries ago, by sailors."—*Asiat. Res.* vol. xv. p. 327.

[4] In describing the events in the reign of Dhaatu-Sena, the king at whose instance and during whose reign the *Mahawanso* was written by his uncle Mahanamo, between the years A.D. 459, 477, the author, who was contemporary with the occurrence he relates, says, that "at the three principal chetyos (dagobas) he made a golden chatta and a diamond hoop (*wajira chumbatan*) for each."—*Mahawanso*, ch. xxxviii. p. 259. Similar instances of gems being attached to the chattas of dagobas are recorded in the same work, ch. xlii. and elsewhere.

The original passage relative to the diamond hoop placed by Sanghatissa runs thus in Pali, "wisun satasahassagghé chaturócha mahamanin majjhé chatunnan suriyánán thapápési mahipati; *thupassa muddhani tatha anagghán wajira-chumbatan*," which Mr. DE ALWIS translates: "The king caused to be set four gems, each of the value of a lac, in the centre of the four emblems of the sun, *and likewise an invaluable adamantine* (or diamond) *ring on the top of the thupa*." Some difficulty existed in TURNOUR's mind as to the rendering to be given to these two last words "*wajira-chumbatan*." Prof. H. H. WILSON, to whom I have submitted the sentence, says, "*Wajira* is either 'diamond,' or 'adamant,' or 'the thunderbolt of Indra;'" and with him the most learned Pali scholars in Ceylon entirely concur; De Saram, the Maha-Moodliar of the Governor's Gate, the Rev. Mr. Gogerly, Mr. De Alwis, Pepole the High Priest of the

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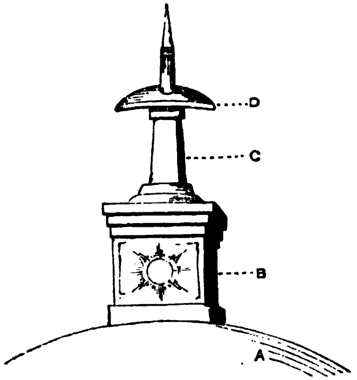
The chief interest of the story centres in the words "*to serve as a protection against lightning*," which do not belong to the metrical text of the *Mahawanso*, but are taken from the explanatory notes appended to it. I have stated elsewhere, that it was the practice of authors who wrote in Pali verse, to attach to the text a commentary in prose, in order to illustrate the obscurities incident to the obligations of rhythm. In this in



A. Crown of the Dagoba.
B. The capital, with the sun on each of the four sides.
C. The spire.
D. The umbrellas or chatta, gilt and surrounded by "chumbatan," a diamond circlet.

Asgiria (who was Turnour's instructor in Pali), Wattegamine Unnanse of Kandy, Bulletgamone Unnanse of Galle, Batuwantudawe, of Colombo, and De Soyza, the translator Moodliar to the Colonial Secretary's Office. Mr. DE ALWIS says, "The epithet *anagghan*, 'invaluable' or 'priceless,' immediately preceding and qualifying *wajira* in the original (but omitted by Turnour in the translation), shows that a substance far more valuable than glass must have been meant." "*Chumbatan*," Prof. WILSON supposed to be the Pali equivalent to the Sanskrit *chumbakam*, "the kisser or attractor of steel;" the question he says is whether *wajira* is to be considered an adjective or part of a compound substantive, whether the phrase is a *diamond-magnet pinnacle*, or *conductor*, or a *conductor* or *attractor of the thunder-bolt*. In the latter case it would intimate that the Singhalese had a notion of lightning conductors. Mr. DE ALWIS, however, and Mr. GOGERLY agree that chumba*ka* is the same both in Sanskrit and Pali, whilst chumba*ta* is a Pali compound, which means a *circular prop* or *support*, *a ring* on which something rests, or *a roll of cloth* formed into a circle to form a stand for a vessel; so that the term must be construed to mean *a diamond*, circlet, and the passage, transposing the order of the words, will read literally thus:

thapapesi	tatha	muddhani	thupassa
he placed	in like manner	on the top	of the thupo
anagghan	wajira - chumbatan.		
a valuable	diamond hoop.		

TURNOUR wrote his translation whilst residing at Kandy and with the aid of the priests, who being ignorant of English could only assist him to Singhalese equivalents for Pali words. Hence he was probably led into the mistake of confounding *wajira*, which signifies "diamond," or an instrument for cutting diamonds, with the modern word *widura*, which bears the same import but is colloquially used by the Kandyans for "glass." However as glass as well as the diamond is an insulator of electricity, the force of the passage would be in no degree altered whichever of the two substances was really particularised. TURNOUR was equally uncertain as to the meaning of *chumbatan*, which in one instance he has translated a "pinnacle," and in the other he has left without any English equivalent, simply calling "wajira chumbatan" a "chumbatan of glass."—*Mahawanso*, ch. xxxviii. p. 259.

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stance, the historian, who was the kinsman and intimate friend of the king, by whose order the glass pinnacle was raised in the fifth century, probably felt that the stanza descriptive of the placing of the first of those costly instruments in the reign of Sanghatissa required some elucidation, and therefore inserted a passage in the "tika," by which his poem was accompanied, to explain that the motive of its erection was "*for the purpose of averting the dangers of lightning.*"[1]

The two passages taken in conjunction leave no room for doubt, that the object in placing the diamond hoop on the dagoba, was *to turn aside the stroke of the thunderbolt.*

But the question still remains, whether, at that very early period, the people of Ceylon had such a conception, however crude and erroneous, of the nature of electricity, and the relative powers of conducting and non-conducting bodies, as would induce them to place a mistaken reliance upon the contrivance described, as one calculated to ensure their personal safety; or whether, as religious devotees, they presented it as a costly offering to propitiate the mysterious power that controls the elements. The thing affixed was however so insignificant in value, compared with the stupendous edifice to be protected, that the latter supposition is scarcely tenable. The dagoba itself was an offering, on the construction of which the wealth of a kingdom had been lavished; besides which it enshrined the holiest of all conceivable objects — portions of the deified body of

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[1] The explanatory sentence in the tika is as follows:

"Thupassa muddhani tathá naggha wajira-chumbatanti tathewe mahà thupassa muddhani satasahasaggha nikan maha manincha patitha petwa tassahettà asani upaddawa widdhansa natthan adhara walayamewa katwa anaggha wajira-chumbatancha pujeseti atho."

Mr. DE SARAM and Mr. DE ALWIS concur in translating this passage as follows, "In like manner having placed a large gem, of a lac in value, on the top of the great thupa, he fixed below it, *for the purpose of destroying the dangers of lightning*, an invaluable diamond chumbatan, having made it like a supporting ring or circular rest." Words equivalent to those in *italics*, Mr. TURNOUR embodied in his translation, but placed them between brackets to denote that they were a quotation.

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Gotamo Buddha himself; and if these were not already secured from the perils of lightning by their own sanctity, their safety could scarcely be enhanced by the addition of a diamond hoop.

The conjecture is, therefore, forced on us, that the Singhalese, in that remote era, had observed some physical facts, or learned their existence from others, which suggested the idea that it might be practicable, by some mechanical device, to ward off the danger of lightning. It is just possible that having ascertained that glass or precious stones acted as insulators of electricity, it may have occurred to them that one or both might be employed as preservative agents against lightning.

Modern science is enabled promptly to condemn this reasoning, and to pronounce that the expedient, so far from averting, would fearfully add to, the peril. But in the infancy of all inquiries the observation of effects generally precedes the comprehension of causes, and whilst it is obvious that nothing attained by the Singhalese in the third century anticipated the great discoveries relative to the electric nature of lightning, which were not announced till the seventeenth or eighteenth, we cannot but feel that the contrivance described in the *Mahawanso*, was one likely to originate amongst an ill-informed people, who had witnessed certain phenomena the causes of which they were unable to trace, and from which they were incapable of deducing any accurate conclusions.[1]

[1] I have been told that within a comparatively recent period it was customary in this country, from some motive not altogether apparent, to surmount the lightning conductors of the Admiralty and some other Government buildings with a *glass summit*.

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CHAP. X.

SINGHALESE LITERATURE.

THE literature of the ancient Singhalese derived its character from the hierarchic ascendancy, which was fostered by their government, and exerted a preponderant influence over the temperament of the people. The Buddhist priesthood were the depositories of all learning and the dispensers of all knowledge: — by the obligation of their order the study of the classical Pali[1] was rendered compulsory upon them[2], and the books which have come down to us show that they were at the same time familiar with Sanskrit. They were employed by royal command in compiling the national annals[3], and kings at various periods not only encouraged their labours by endowments of lands[4], but conferred distinction on such pursuits by devoting their own attention to the cultivation of poetry[5], and the formation of libraries.[6]

The books of the Singhalese are formed to-day, as they have been for ages past, of *olas* or strips taken from the young leaves of the Talipat palm, cut before they have acquired the dark shade and strong texture which belong to the full grown frond.[7]

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[1] *Pali*, which is the language of Buddhist literature in Siam, Ava, as well as in Ceylon, is, according to Dr. MILL, "no other than the Magadha Pracrit, the classical form in ancient Behar of that very peculiar modification of Sanskrit speech which enters as largely into the drama of the Hindus, as did the Doric dialect into the Attic tragedy of Ancient Greece." In 1826 MM. BURNOUF and LASSEN published their learned "*Essai sur le Pali*," but the most ample light was thrown upon its structure and history by the subsequent investigations of TURNOUR, who, in the introduction to his version of the *Mahawanso*, has embodied a disquisition on the antiquity of Pali as compared with Sanskrit. (p. xxii. &c.)

[2] *Rajaratnacari*, p. 106.

[3] *Ibid.*, p. 43—74.

[4] *Ibid.*, p. 113.

[5] *Rajavali*, p. 245; *Mahawanso*, ch. liv., lxxix.

[6] *Rajavali*, p. 224.

[7] The leaves of the Palmyra, similarly prepared, are used for writings of an ordinary kind, but the most valuable books are written on the Talipat. See *ante*, Vol. I. Pt. I. ch. iii. p. 3.

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After undergoing a process (one stage of which consists in steeping them in milk) to preserve their flexibility, they are submitted to pressure to render their surface uniformly smooth. They are then cut into stripes of two or three inches in breadth, and from one to three feet long. These are pierced with two holes, one near each end, through which a cord is passed, so as to secure them between two wooden covers, lacquered and ornamented with coloured devices. The leaves thus strung together and secured, form a book.

On these palm-leaves the custom is to write with an iron stile held nearly upright, and steadied by a nick cut to receive it in the thumb-nail of the left hand. The stile is sometimes richly ornamented, shaped like an arrow, and inlaid with gold, one blade of the feather serving as a knife to trim the leaf preparatory to writing. The case is sometimes made of carved ivory bound with hoops of filigreed silver.

WRITING WITH A STILE.

The furrow made by the pressure of the steel is rendered visible by the application of charcoal ground with a fragrant oil[1], to the odour of which the natives ascribe the remarkable state of preservation in which their most sacred books are found, its aromatic properties securing the leaves from destruction by white ants and other insects.[2]

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[1] For this purpose a resin is used, called *dumula* by the natives, who dig it up from beneath the surface of lands from which the forest has disappeared.

[2] In Ceylon there are a few Buddhist books brought from Burmah, in which the text is inscribed on plates of silver. I have seen others on leaves of ivory, and some belonging to the Dalada Wihara, at Kandy, are engraved on gold. The earliest grants of lands, called *sannas*, were written on palm-leaves, but an inscription on a rock at Dambool, which is of the date 1200 A.D., re-

The wiharas and monasteries of the Buddhist priesthood are the only depositaries in Ceylon, of the national literature, and in these are to be found quantities of books on an infinity of subjects, some of them, especially those relating to religion and ecclesiastical history, being of the remotest antiquity.

Works of the latter class are chiefly written in Pali. Treatises on astronomy, mathematics, and physics are almost exclusively in Sanskrit, whilst those on general literature, being comparatively recent, are composed in Elu, a dialect which differs from the colloquial Singhalese rather in style than in structure, having been liberally enriched by incorporation from Sanskrit and Pali.[1] But of the works which have come down to us, ancient as well as modern, so great is the preponderance of those in Pali and Sanskrit, that the Singhalese can scarcely be said to possess a literature in their national dialect; and in the books they do possess, so utter is the dearth of invention or originality, that almost all which are not either ballads or compilations are translations from one or other of the two learned languages.

I. PALI. — Works in Pali are written, like those of Burmah and Siam, not in Nagari or any peculiar character, but in the vernacular alphabet. Of these, as might naturally be expected, the vast majority are on subjects connected with Buddhism, and next to them in point of number are grammars and grammatical commentaries.

The original of the great Pali grammar of Kachcha-

cords that King Prakrama Bahu I. made it a rule that "when permanent grants of land were to be made to those who had performed meritorious services, such behests should not be evanescent like lines drawn on water, by being inscribed on leaves to be destroyed by rats and white ants, but engraved on plates of copper, so as to endure to posterity.

[1] TURNOUR'S Introd. to the *Mahawanso*, p. xiii. A critical account of the Elu will be found in an able and learned essay on the language and literature of Ceylon by Mr. J. DE ALWIS, prefixed to his English translation of the *Sidath Sangara*, a grammar of Singhalese, written in the fourteenth century. Colombo, 1852. Introd. p. xxvii. xxxvii.

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yano is now lost, but its principles survive in numerous treatises, and text-books written at succeeding periods to replace it.[1] Such is the passion for versification, probably as an assistant to memory, that nearly every Singhalese work, ancient as well as modern, is composed in rhyme, and even the repulsive abstractions of Syntax have found an Alvarez and been enveloped in metrical disguise.

Of the sacred writings in Pali, the most renowned are the *Pitakattayan*, literally "The Three Baskets," which embody the doctrines, discourses, and discipline of the Buddhists, and so voluminous is this collection that its contents extend to 592,000 stanzas; and the Atthakatha or commentaries, which are as old as the fifth century[2], contain 361,550 more. From their voluminousness, the Pittakas are seldom to be seen complete, but there are few of the superior temples in which one or more of the separate books may not be found.

The most popular portion of the Pittakas are the legendary tales, which profess to have been related by GOTAMO BUDDHA himself, in his *Sutras* or discourses, and were collected under the title of *Pansiya-panas-jataka-pota*, or the "Five hundred and fifty Births." The series is designed to commemorate events in his own career, during the states of existence through which he passed preparatory to his reception of the Buddhahood. In

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[1] The Rev. R. SPENCE HARDY, to whom I am indebted for much valuable information on the subject of the literature current at the present day in Ceylon, published a list in the *Journal of the Ceylon Branch of the Asiatic Society* for 1848, in which he gave the titles of 467 works in Pali, Sanskrit, and Elu, collected by himself during his residence in Ceylon. Of these about 80 are in Sanskrit, 150 in Elu (or Singhalese), and the remainder in Pali, either with or without translations. Of the Pali books 26 are either grammars or treatises on grammar.

This catalogue of Mr. Hardy is, however, by no means to be regarded as perfect; not only because several are omitted, but because many are but excerpts from larger works. The titles are seldom descriptive of the contents, but in true Oriental taste are drawn from emblems and figures, such as "Light," "Gems," and "Flowers." The authors' names are rarely known, and the language or style seldom affords an indication of the age of the composition.

[2] They were translated into Pali from Singhalese by Buddhaghoso, A.D. 420. — *Mahawanso*, c. xxxvii. p. 252.

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structure and contents it bears a striking resemblance to the Jewish Talmud, combining, with aphorisms and maxims, philological explanations of the divine text, stories illustrative of its doctrines, into which not only saints and heroes, but also animals and inanimate objects, are introduced, and not a few of the fables that pass as Æsop's are to be found in the Jatakas of Ceylon. There are translations into Singhalese of the greater part of its contents, and so attractive are its narratives that the natives will listen the livelong night to recitations from its pages.[1]

The other Pali works[2] embrace subjects in connection with cosmography and the Buddhist theories of the universe; the distinctions of caste, topographical narratives, a few disquisitions on medicine, and books which, like the Milindaprasna, or "*Questions of Milinda*,"[3] without being canonical give an orthodox summary of the national religion.

But the *chefs d'œuvre* of Pali literature are their chronicles, the *Dipawanso*, *Mahawanso*, and others; of these the most important by far is the *Mahawanso* and its tikas or commentaries. It stands at the head of the historical literature of the East; unrivalled by anything extant in Hindustan[4], the wildness of whose chro-

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[1] Hardy's *Buddhism*, ch. v. p. 98.

[2] A lucid account of the principal Pali works in connection with religion will be found in the Appendix to Hardy's *Manual of Buddhism*, p. 509, and in Hardy's *Eastern Monachism*, pp. 27, 315.

[3] The title of this popular work has given rise to a very curious conjecture of Turnour's. It professes to contain the dialectic controversies of Naga-sena, through whose instrumentality Buddhism was introduced into Kashmir, with Milinda, who was the Raja of an adjoining country, called Sagala, near the junction of the rivers Ravi and Chenab. These discussions must have taken place about the year B.C. 43. Now Sagala is identical with Sangala, the people of which, according to Arrian, made a bold resistance to the advance of Alexander the Great beyond the Hydraotes; and it has been supposed by Sir Alexander Burnes to have occupied the site of Lahore. Its sovereign, therefore, who embraced the doctrines of Buddha, was probably an Asiatic Greek, and Turnour suggests that the "Yons" or "Yonicas" who, according to the Milinda-prasna, formed his body-guard, were either Greeks or the descendants of Greeks from Ionia. —*Journ. Asiat. Soc. Beng.* v. 523; Hardy's *Manual of Buddhism*, p. 512; Reinaud, *Mémoire sur l'Inde*, p. 65.

[4] Lassen, *Indis. Alt.*, vol. ii. p. 13—15.

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nology it controls; and unsurpassed, if it be equalled, by the native annals of China or Kashmir. So conscious were the Singhalese kings of the value of this national monument, that its continuation was an object of royal solicitude to successive dynasties[1] from the third to the thirteenth century; and even in the decay of the monarchy the compilation was performed in A. D. 1696, by an unknown hand, and, finally, brought down to A. D. 1758 by order of one of the last of the Kandyan kings.

Of the chronicles thus carefully constructed, which exhibit in their marvellously preserved leaves the study and elaboration of upwards of twelve hundred years, PRINSEP, supreme as an authority, declared that they served to "clear away the chief of difficulties in Indian genealogies, which seem to have been intentionally falsified by the Brahmans and thrown back into remote antiquity, in order to confound their Buddhist rivals."[2]

But they display in their mysterious rhymes few facts or revelations to repay the ordinary reader for the labour of their perusal. Written exclusively by the Buddhist priesthood, they present the meagre characteristics of the soulless system which it is their purpose to extol. No occurrence finds a record in their pages which does not tend to exalt the genius of Buddhism or commemorate the acts of its patrons: the reigns of the monarchs who erected temples for its worship, or consecrated shrines for its relics, are traced with tiresome precision; even where their accession

[1] COSMAS INDICO-PLEUSTES, EDRISI, ABOU-ZEYD, and almost all the travellers and geographers of the middle ages, have related, as a trait of the native rulers of Ceylon, their employment of annalists to record the history of the kingdom. — EDRISI, *Clim.* i. sec. 8, p. 3.

[2] PRINSEP, in a private letter to Turnour, in 1836, speaking of the singular value of the *Mahawanso* in collating the chronology of India, says, "had your Buddhist chronicles been accessible to Sir W. Jones and Wilford, they would have been greedily seized to correct anomalies at every step."

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was achieved by usurpation and murder, their lives are extolled for piety, provided they were characterised by liberality to the church; whilst those alone are stigmatised as impious and consigned to long continued torments, whose reigns are undistinguished by acts conducive to the exaltation of the national worship.[1]

The invasions which disturbed the tranquillity of the throne, and the schisms which rent the unity of the church, are described with painful elaboration; but we search in vain for any instructive notices of the people or of their pursuits, for any details of their social condition or illustration of their intellectual progress. Whilst the commerce of all nations was sweeping along the shores of Ceylon, and the ships of China and Arabia were making its ports their emporiums; the national chronicles, whose compilation was an object of solicitude to successive dynasties, are silent regarding these adventurous expeditions; and utterly indifferent to all that did not affect the progress of Buddhism or minister to the interests of the priesthood.[2]

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[1] Asoca, "who put to death one hundred brothers," to secure the throne to himself, is described in the *Mahawanso*, ch. v. p. 21, as a prince "of piety and supernatural wisdom." Even Malabar infidels, who assassinated the Buddhist kings, are extolled as "righteous sovereigns" (*Mahawanso*, ch. xxi. p. 127); but a Buddhist king who caused a priest to be put to death who was believed to be guilty of a serious crime, is consigned by the *Rajavali* to a hell with a copper roof "so hot that the waters of the sea are dried as they roll above it."—*Rajavali*, p. 192.

[2] It has been surmised that in the intercourse which subsisted between India and the western world by way of Alexandria and Persia, and which did not decline till the sixth or seventh century, the influences of Nestorian Christianity may have left their impress on the genius and literature of Buddhism; and in the legends of its historians one is struck by the many passages that suggest a similarity to events recorded in the Jewish Scriptures. The coincidence may also be accounted for by the close proximity of a Jewish race in Affghanistan (the descendants of those carried away into captivity by Shalmanasar) which eventually extended itself along the west coast of India, and became the progenitors of the Hebrew colony that still inhabits the south of the Dekkan near Cochin, and are known as the "Black Jews of Malabar." The influence of this immigration is perceptible in the sacred books, both of the Brahmans and Buddhists; the laws of Menu present some striking resemblances to the law of Moses, and it was probably from a knowledge of the con-

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II. Sanskrit. — In Sanskrit or translations from it, the Singhalese have preserved their principal treatises

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tents of the Hebrew rolls still possessed by this remnant of the dispersion that the Buddhists borrowed the numerous incidents which we find re-produced in the historical books of Ceylon. Thus the aborigines, when subdued by their Bengal invaders, were forced, like the Israelites, by their masters "to make bricks" for the construction of their stupendous edifices (*Mahawanso*, ch. xxviii.). On the occasion of building the great dagoba, the Ruanwellé, at Anarajapoora, B.C. 161, the materials were all prepared at a distance, and brought ready to be deposited in their places (*Mahawanso*, xxvii.); as on the occasion of building the first temple at Jerusalem, "the stone was made ready before it was brought, so that there was neither hammer, nor axe, nor any tool of iron heard whilst it was building." The parting of the Red Sea to permit the march of the fugitive Hebrews has its counterpart in the exploit of the King Gaja Bahu, A.D. 109, who, when marching his army to the coast of India, in order to bring back the Singhalese from captivity in Sollee, "smote the waters of the sea till they parted, so that he and his army marched through without wetting the soles of their feet."—*Rajaratnacari*, p. 59. King Maha Sen (A.D. 275), seeking a relic, had the mantle of Buddha lowered down from heaven: and Buddha had, previously, in designating Kasyapa as his successor, transmitted to him his robe as Elijah let fall his mantle upon Elisha. (*Rajavali*, p. 238; Hardy's *Oriental Monachism*, p. 119.) There is a resemblance too between the apotheosis of Dutugaimunu and the translation of Elijah when "in a chariot and horses of fire he went up into heaven" (2 Kings, ii. 11);—according to the *Mahawanso*, c. xxii. p. 199, when the Singhalese king was dying, a chariot was seen descending from the sky and his disembodied spirit "manifested itself standing in the car in which he drove thrice round the great shrine, and then bowing down to the attendant priesthood, he departed for tusita" (the Buddhists' heaven). The ceremonial and dogmatic coincidences are equally remarkable;—constant allusion is made to the practice of the kings to "wash the feet of the priests and anoint them with oil."—*Mahawanso*, c. xxv.—xxx. In conformity with the denunciation that the sins of the fathers were to be visited on the children, the Jews inquired whether a "man's parents did commit sin that he was born blind?" (John, ix. 3); and in like manner, in the *Rajavali*, "the perjury of Wijayo (who had repudiated his wife after swearing fidelity to her) was visited on the person of the King Panduwaasa," his nephew, who was afflicted with insanity in consequence (*Rajavali*, pp. 174—178). The account in the *Rajaratnacari* of King Batiya Tissa (B. C. 20.), who was enabled to enter the Ruanwellé dagoba by the secret passage known only to the priests, and to discover their wealth and treasures deposited within, has a close resemblance to the descent of Daniel and King Astyages into the temple of Bel, by the privy entrance under the table, whereby the priests entered and consumed the offerings made to the idol (Bel and the Dragon, Apocryp. ch. i.—xiii.; *Rajaratnacari*, p. 45). The inextinguishable fire which was for ever burning on the altar of God (Leviticus, ch. vi. 13) resembles the lamps which burned for 5000 years continually in honour of Buddha (*Mahawanso*, ch. lxxxi.; *Rajaratnacari*, p. 49); and these again had their imitators in the lamp of Minerva, which was never permitted to go out in the temple at Athens, and in the λυχνον ασβεστον, which was for ever burning in the temple of Ammon. The miracle of feeding the multitude by our Saviour upon a few loaves and fishes, is repeated in the *Maha-*

on physical science, cosmography, materia medica, and surgery. From it, too, they have borrowed the limited knowledge of astronomy, possessed by the individuals who combined with astrology and the casting of nativities, the practice of palmistry and the interpretation of dreams. In Sanskrit, they have treatises on music and painting, on versification and philology; and their translations include a Singhalese version of those portions of the *Ramayana*, which commemorate the conquest of Lanka.

III. Elu and Singhalese. — There is no more striking evidence of the intellectual inferiority of the modern, as compared with the ancient inhabitants of Ceylon, than is afforded by the popular literature of the latter, and the contrast it presents to the works of former ages. Descending from the gravity of religious disquisition and the dignity of history and science, the authors of later times have been contented to limit their efforts to works of fiction and amusement, and to ballads and doggerel descriptions of places or passing events.

But, to the credit of the Singhalese, it must be

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wanso, where a divinely endowed princess fed Pandukabhaya, B.C. 437, and five hundred of his followers with the repast which she was taking to her father and his reapers, the refreshment being "scarcely diminished in quantity as if one person only had eaten therefrom."—*Mahawanso,* ch. x. p. 62. The preparation of the high road for the procession of the sacred bo-tree after its landing (*Mahawanso,* c. xix. p. 116), and the order to clear a road through the wilderness for the march of the king at the inauguration of Buddhism, recall the words of the prophet, "Prepare ye the way of the Lord, make straight a highway in the desert." (Isaiah, xl. 3.) And we are reminded of the prophecy of Isaiah as to the kingdom of peace, in which "the leopard shall lie down with the kid and the calf with the lion, and a young child shall lead them," by the Singhalese historians, in describing the religious repose of the kingdom of Asoca under the influence of the religion of Buddha, where "the elk and the wild hog were the guardians of the gardens and fields, and the tiger led forth the cattle to graze and reconducted them in safety to their pens." — *Mahawanso,* ch. v. p. 22. The narrative of the "judgment of Solomon," in the matter of the contested child (1 Kings, ch. iii.), has its parallel in a story in every respect similar in the Pansyiapanas-jataka.—Robert's *Orient. Illustr.* p. 191.

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said, that in their compositions, however satirical or familiar they may be, their verses are entirely free from the licentiousness which disfigures similar productions in India; and that if deficient in imagination and grace, they are equally exempt from grossness and indelicacy.

The Singhalese language is so flexible that it admits of every description of rhythm; of this the versifiers have availed themselves to exhibit every variety of stanza and measure, and every native, male or female, can recite numbers of their favourite ballads. Their graver productions consist of poems in honour, not of Buddha alone, but of deities taken from the Hindu Pantheon, — Patine, Siva, and Ganesa, panegyrics upon almsgiving, and couplets embodying aphorisms and morals.

A considerable number of the Sutras or Discourses of Buddha have been translated into the vernacular from Pali, but the most popular of all are the *jatakas*, the Singhalese versions of which are so extended, that one copy alone fills 2000 olas or palm leaves, each twenty-nine inches in length and containing nine lines in a page.

The other works in Singhalese are on subjects connected with history, such as the *Rajavali* and *Rajaratnacari*, on grammar and lexicography, on medicine, topography, and other analogous subjects. But in all their productions, though invested with the trappings of verse, there alike is an avoidance of what is practical and true, and an absence of all that is inventive and poetic. They contain nothing that appeals to the heart or the affections, and their efforts of imagination aspire not to please or to elevate, but to astonish and bewilder by exaggeration and fable. Their poverty of resources leads to endless repetitions of the same epithets and incidents; books are multiplied at the present day chiefly by extracts from works of

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established popularity, and the number of qualified writers is becoming annually less from the altered circumstances of the island and the decline of those institutions and prospects which formerly stimulated the ambition of the Buddhist priesthood, and inspired a love of study and learning.

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CHAP. XI.

BUDDHISM AND DEMON-WORSHIP.[1]

It is difficult to attempt any condensed, and at the same time perspicuous, sketch of the national religion of Ceylon —a difficulty which arises not merely from the voluminous obscurity of its sacred history and records; but still more from confusion in the variety of forms under which Buddhism exhibits itself in various localities, and the divergences of opinion which prevail as to its tenets and belief. The antiquity of its worship is so extreme, that doubts still hang over its origin and its chronological relations to the religion of Brahma. Whether it took its rise in Hindustan, or in countries farther to the West, and whether Buddhism was the original doctrine of which Brahmanism became a corruption, or Brahmanism the original and Buddhism an effort to restore it to its pristine purity[2],—all these are questions which have yet to be

[1] The details of the following chapter have been principally taken from Sir J. EMERSON TENNENT'S *Christianity in Ceylon*, ch. v.

[2] Those early writers on the religions of India who drew their information exclusively from Brahmanical sources, incline to favour the pretensions of that system as the most ancient of the two. Klaproth, a profound authority, was of this opinion; but in later times the translations of the Pali records and other sacred volumes of Buddhism in Western India, Ceylon, and Nepal, have inclined the preponderance of opinion, if not in favour of the superior antiquity of Buddhism, at least in support of its contemporaneous development. A summary of the arguments in favour of the superior antiquity of Buddhism will be found in the "*Notes*," &c., by Colonel SYKES, in the 12th volume of the *Asiatic Journal*—and in the *Essai sur l'Origine des Principaux Peuples Anciens*, par F. L. M. MAUPIED, chap. viii. The arguments on the side of those who look on Brahmanism as the original, are given by MOUNTSTUART ELPHINSTONE in his *History of India*, vol. i. b. ii. c. 4. An able disquisition will be found in MAX MÜLLER'S *History of Sanskrit Literature*, pp. 33, 260, &c. Mr. GOGERLY, the most accomplished student of Buddhism in Ceylon, says its sacred books expressly demonstrate that its doctrines had been preached by the twenty-four Buddhas who

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adjusted by the results of Oriental research.[1] It is, however, established by a concurrence of historical proofs, that many centuries before the era of Christianity the doctrines of Buddha were enthusiastically cultivated in Baha, the *Magadha*, or country of the Magas, whose modern name is identified with the *Wiharas* or monasteries of Buddhism. Thence its teachers diffused themselves extensively throughout India and the countries to the eastward;—upwards of two thousand years ago it became the national religion of Ceylon and the Indian Archipelago; and its tenets have been adopted throughout the vast regions which extend from Siberia to Siam, and from the Bay of Bengal to the western shores of the Pacific.[2]

Looking to its influence at the present day over at least three hundred and fifty millions of human beings—exceeding one-third of the human race—it is no exaggeration to say that the religion of Buddha is the most widely diffused that now exists, or that has ever existed since the creation of mankind.[3]

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had lived prior to Gotama, in periods incredibly remote; but that they had entirely disappeared at the time of Gotama's birth, so that he re-discovered the whole, and revived an extinguished or nearly extinct school of philosophy.—*Notes on Buddhism* by the Rev. Mr. GOGERLY, Appendix to LEE's Translation of Ribeyro, p. 265.

[1] The celebrated temple of Somnauth was originally a Buddhist foundation, and in the worship of Jaggernath, to whose orgies all ranks are admitted without distinction of caste, there may still be traced an influence of Buddhism, if not a direct Buddhistical origin. Colonel Sykes is of opinion that the sacred tooth of Buddha was at one time deposited and worshipped in the great Temple of Calinga, now dedicated to Jaggernath, by the Princes of Orissa, who in the fourth century professed the Buddhist religion.—Colonel SYKES, *Notes*, &c., *Asiatic Journal*, vol. xii. pp. 275, 317, 420.

[2] FA HIAN declares that in the whole of India, including Affghanistan and Bokhara, he found in the IVth century a Buddhist people and dynasty, with traditions of its endurance for the preceding thousand years. "As to Hindostan itself, he says, from the time of leaving the deserts (of Jaysulmeer and Bikaneer) and the river (Jumna) to the west, *all the kings of the different kingdoms in India are firmly attached to the law of Buddha*, and when they do honour to the ecclesiastics they take off their diadems."—See also MAUPIED, *Essai sur l'Origine des Principaux Peuples Anciens*, chap. ix. p. 209.

[3] See *ante*, p. 326. So ample are the materials offered by Buddhism for antiquarian research, that its doctrines have been sought to be identified at once with the Asiatic philosophy and with the myths of the Scandinavians. Buddha has been at

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From the earliest period of Indian tradition, the struggle between the religion of Buddha and that of Brahma was carried on with a fanaticism and perseverance which resulted in the ascendancy of the Brahmans, perhaps about the commencement of the Christian era, and the eventual expulsion some centuries later of the worship of their rivals from Hindustan; but at what precise time the latter catastrophe was consummated has not been recorded in the annals of either sect.[1]

That Buddhism thus dispersed over eastern and central Asia became an active agent in the promotion of whatever civilisation afterwards enlightened the races by whom its doctrines were embraced, seems to rest upon evidence which admits of no reasonable doubt. The introduction of Buddhism into China is ascertained to have been con-

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one time conjectured to be the Woden of the Scythians; at another the prophet Daniel, whom Nebuchadnezzar had created master of the astrologers, or chief priest of the Magi, as the title is rendered in the Septuagint—Αρχοντα Μαγων. An antiquarian of Wales, in devising a pedigree for the Cymri, has imported ancestors for the ancient Britons from Ceylon; and a writer in the *Asiatic Researches*, in 1807, as a preamble to the proof that the binomial theorem was familiar to the Hindus, has traced Western civilisation to an irruption of philosophers from India, identified the Druids with the Brahmans, and declared Stonehenge to be "one of the temples of Boodh." (*Asiat. Res.*, vol. ii. p. 448.) A still more recent investigator, M. MAUPIED, has collected, in his *Essai sur l'Origine des Peuples Anciens*, what he considers to be the evidence that Buddhism may be indebted for its appearance in India to the captivity of the Jews by Salmanasar, 720 B.C.; to their dispersion by Assar-Addon at a still more recent period; to their captivity in Babylon, 606 B.C.; their diffusion over Media and the East, Persia, Bactria, Thibet, and China, and the communication of their sacred book to the nations amongst whom they thus became sojourners. He ventures even to suggest a possible identity between the names Jehovah and Buddha: "Les voyelles du mot *Bouddha* sont les mêmes que celles du mot Jéhovah, qu'on prononce aussi *Jouva*; mais d'ailleurs le mon de Boudda a bien pu être tiré du mot *Jeoudda* Juda, le dieu de Joudda *Boudda*." (Chap. ix. p. 235.) To account for the purer morals of Buddhism, MAUPIED has recourse to the conjecture that they may have been influenced by the preaching of St. Thomas at Ceylon, and Bartholomew on the continent of India. "*Or il nous semble logique de conclure de tous ces faits que le Bouddhisme, dans ses doctrines essentielles, est d'origine Juive et Chrétienne; conséquence inattendue pour la plus de nos lecteurs sans doute.*" —MAUPIED, ch. ix. p. 257; ch. x. p. 263.

[1] The final overthrow of Buddhism in Bahar and its expulsion from Hindustan took place probably between the seventh and twelfth centuries of the Christian era. Colonel SYKES, however, extends the period to the thirteenth or fourteenth (*Asiatic Journal*, vol. iv. p. 334).

temporary with the early development of the arts amongst this remarkable people, at a period coeval, if not anterior, to the era of Christianity.[1] Buddhism exerted a salutary influence over the tribes of Thibet; through them it became instrumental in humanising the Moguls; and it more or less led to the cessation of the devastating incursions by which the hordes of the East were precipitated over the Western Empire in the early ages of Christianity.

The Singhalese, and the nations of further Asia, are indebted to Buddhism for an alphabet and a literature[2]; and whatever of authentic history we possess in relation to these countries we owe to the influence of their generic religion. Nor are its effects limited to these objects: much of what is vigorous in the character of its northern converts may be traced to the operation of its principles, in the development of their peculiar idiosyncrasy, which, unlike that of the unwarlike Singhalese, rejected sloth and effeminacy to aim at conquest and power. Looking to the self-reliance which Buddhism inculcates, the exaltation of intellect which it proclaims, and the perfection of virtue and wisdom to which it points as within the reach of every created being, it may readily be imagined, that it must have wielded a spell of unusual potency, and one well calculated to awaken boldness and energy in those already animated by schemes of ambition. In Ceylon, on the contrary, owing more or less to insulation and seclusion, Buddhism has survived for upwards of 2000 years as unchanged in all its leading characteristics as the genius of the people has remained torpid and inanimate under its influence. In this respect the Singhalese are the living mummies of past ages; and realise in their immovable characteristics the Eastern fable of the city whose inhabitants were perpetuated in marble. If change has in any degree supervened, it has been from the corruption of the practice, not from any abandonment of the

[1] MAX MÜLLER, *Hist. Sanskrit Literature*, p. 264.

[2] See BURNOUF et LASSEN, *Essai sur le Pali, ou Langue Sacrée de la Presqu'ile au-dela du Gange*, ch. i., &c.

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principles, of Buddhism; and in arts, literature, and civilisation, the records of their own history, and the ruins of their monuments, attest their deterioration in common with that of every other nation which has not at some time been brought under the ennobling influences of Christianity.

In alluding to the doctrines of Buddhism, as it exists at the present day, my observations are to be understood as applying to the aspect under which it presents itself in Ceylon, irrespective of the numerous forms in which it has been cultivated elsewhere. Even before the decease of the last Buddha, schisms had arisen amongst his followers in India. Eighteen heresies are deplored in the *Mahawanso* within two centuries from his death; and four distinct sects, each rejoicing in the name of Buddhists, are still to be traced amongst the remnants of his worshippers in Hindustan.[1] In its migrations to other countries since its dispersion by the Brahmans, Buddhism has assumed and exhibited itself in a variety of shapes. At the present day its doctrines, as cherished among the Jainas of Guzerat and Rajpootana[2], differ widely from its mysteries, as administered by the Lama of Thibet; and both are equally distinct from the metaphysical abstractions propounded by the monks of Nepal. Its observances in Japan have undergone a still more striking alteration from their vicinity to the Syntoos; and in China they have been similarly modified in their contact with the rationalism of Lao-tsen and the social demonology of the Confucians.[3] But in each and all the distinction is in degree rather than essence; and the general concurrence is unbroken in all the grand essentials of the system.

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[1] *Colebrooke's Essays on the Philosophy of the Hindoos*, sect. v. part 5, p. 401.

[2] An account of the religion of the Jains or Jainas, will be found in Mountstuart Elphinstone's *History of India*, vol. i. b. ii. c. 4. They arose in the sixth or seventh century, were at their height in the eleventh, and declined in the twelfth. See also Max Müller, *Hist. Sanskrit Literature*, p. 261, &c.

[3] Details of Buddhism in China and Chin-India will be found in the erudite commentaries of Klaproth, Remusat, and Landresse.

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Whilst Brahmanism, without denying the existence, practically ignores the influence and power of a creating and controlling intelligence, Buddhism, exulting in the idea of the infinite perfectibility of man, and the achievement of the highest attainable happiness by the unfaltering practice of every conceivable virtue, exalts the individuals thus pre-eminently wise into absolute supremacy over all existing beings, and attempts the daring experiment of an *atheistic morality*.[1] Even Buddha himself is not worshipped as a deity, or as a still existent and active agent of benevolence and power. He is merely reverenced as a glorified remembrance, the effulgence of whose purity serves as a guide and incentive to the future struggles and aspirations of mankind. The sole superiority which his doctrines admit is that of goodness and wisdom; and Buddha having attained to this perfection by the immaculate purity of his actions, the

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1 M. REMUSAT announces, as the result of his researches, that neither the Chinese, the Tartars, or Monguls have any word in their dialects expressive of our idea of a God.—*Foë Koué Ki*, p. 138; and M. BARTHELEMY SAINT-HILAIRE adds, that "il n'y a pas trace de l'idée de Dieu dans le Bouddhisme entier, ni au début ni au terme."—*Le Bouddha*, &c., Introd. p. iv. Colonel SYKES, in the xiith vol. of the *Asiatic Journal*, pp. 263 and 376, denies that Buddhism is *atheistic*; and adduces, in support of his views, allusions made by FA HIAN. But the passages to which he refers present no direct contradiction to those metaphysical subtleties by which the Buddhistical writers have carefully avoided whilst they closely approach the admission of belief in a deity. I am not prepared to deny that the faith in a supreme being may not have characterised Buddhism in its origin, as the belief in a Great First Cause in the person of Brahma is still acknowledged by the Hindus, although honoured by no share of their adoration. But it admits of little doubt that neither in the discourses of its priesthood at the present day nor in the practice of its followers in Ceylon is the name or the existence of an omnipotent First Cause recognised in any portion of their worship. MAUPIED has correctly described Buddhism both in Ceylon and China as a system of refined atheism (*Essai sur l'Origine des Peuples Anciens*, ch. x. p. 277), and MOUNTSTUART ELPHINSTONE gives the weight of his high authority in the statement that "The most ancient of Báudha sects entirely denies the being of a God; and some of those which admit the existence of God still refuse to acknowledge him as the creator and ruler of the world. . . . . The theistical sect seems to prevail in Nepaul, and the *atheistical to subsist in perfection in Ceylon*."—*History of India*, vol. i. p. ii. c. 4. An able writer in the fourth volume of the *Calcutta Review* has also controverted the assertion of its atheistic complexion; but whatever truth may be developed in his views, their application is confined to Buddhism in Hindustan and Nepal, and is utterly at variance with the practice and received dogmas in Ceylon.

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absolute subjugation of passion, and the unerring accuracy of his unlimited knowledge, became entitled to the homage of all, and was required to render it to none.

Externally coinciding with Hinduism, so far as the avatar of Buddha may be regarded as a pendant for the incarnation of Brahma, the worship of the former is essentially distinguished from the religion of the latter in one important particular. It does not regard that exalted being as an actual emanation or manifestation of the divinity, but as a guide and example to teach an enthusiastic self-reliance by means of which mankind, of themselves and by their own unassisted exertions, are to attain to perfect virtue here and to supreme happiness hereafter. Both systems inculcate the mysterious doctrine of the metempsychosis; but whilst the result of successive embodiments is to bring the soul of the Hindu nearer and nearer to the final beatitude of absorption into the essence of Brahma, the end and aim of the Buddhistical transmigration is to lead the purified spirit to *Nirwana*[1], a condition between which and utter annihilation there exists but the dim distinction of a name. Nirwana is the *exhaustion* but not the *destruction* of existence, the *close* but not the *extinction* of being.

In deliberate consistency with this principle of human elevation, the doctrines of Buddha recognise the full eligibility of every individual born into the world for the attainment of the highest degrees of intellectual perfection and ultimate bliss; and herein consists its most striking departure from the Brahmanical system in denying the superiority of the "twice born" over the rest of mankind; in repudiating a sacerdotal supremacy of race, and in claiming for the pure and the wise that supremacy and exaltation which the self-glorified Brahmans would monopolise for themselves.

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[1] "Nirwana" is Sanskrit, *ni* (*r* euphon. causa) *wana* desire. The Singhalese name "Nirwana" is also derived from *newanawa*, to extinguish. See J. BARTHELEMY SAINT-HILAIRE, *Le Bouddha*, 133, 177, &c.

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Hence the supremacy of "*caste*" is utterly disclaimed in the sacred books which contain the tenets of Buddha; and although in process of time his followers have departed from that portion of his precepts, still distinction of birth is nowhere authoritatively recognised as a qualification for the priesthood. Buddha being in fact a deification of human intellect, the philanthropy of the system extends its participation and advantages to the whole family of mankind, the humblest member of which is sustained by the assurance that by virtue and endurance he may attain an equality though not an identification with the supreme intelligence. Wisdom thus exalted as the sole object of pursuit and veneration, the Buddhists, with characteristic liberality, admit that the teaching of virtue is not necessarily confined to their own professors; especially when the ceremonial of others does not involve the taking of life. Hence in a great degree arises the indifference of the Singhalese as to the comparative claims of Christianity and Buddhism, and hence the facility with which, both under the Portuguese, the Dutch, and the British Government, they have combined the secret worship of the one with the ostensible profession of the other. They in fact admit Christ to have been a teacher, second only to Buddha, but inferior, inasmuch as the latter, who was perfect in wisdom, has attained to the bliss of Nirwana.[1]

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[1] Sir JOHN DAVIS, in his account of the Chinese, states that the Buddhists there worship the "*Queen of Heaven*," a personage evidently borrowed from the Roman Catholics, and that the name of "*Jesus*" appears in the list of their divinities. (Chap. xiv.)

A curious illustration of the prevalence of this disposition to conform to two religions was related to me in Ceylon. A Singhalese chief came a short time since to the principal of a government seminary at Colombo, desirous to place his son as a pupil of the institution, and agreed, without an instant's hesitation, that the boy should conform to the discipline of the school, which requires the reading of the Scriptures and attendance at the hours of worship and prayer; accounting for his ready acquiescence by an assurance that he entertained an equal respect for the doctrines of Buddhism and Christianity. "But how can you," said the principal, "with your superior education and intelligence, reconcile yourself thus to halt between two opinions, and submit to the inconsistency of professing an equal belief in two conflicting religions?" "Do you see," replied the subtle chief, laying his hand on the arm of the other, and directing his attention to a canoe, with a large spar as an outrigger lashed alongside, in which a fisher-

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As regards the *structure of the universe*, the theories of the Buddhists, though in a great degree borrowed from the Brahmans, occupy a much less prominent position in their mythology, and are less intimately identified with their system of religion. Their attention has been directed less to physical than to metaphysical disquisitions, and their views of cosmogony have as little of truth as of imagination in their details. The basis of the system is a declaration of the eternity of matter, and its submission at remote intervals to decay and re-formation; but this and the organisation of animal life are but the results of spontaneity and procession, not the products of will and design on the part of an all powerful Creator.

Buddhism adopts something approaching to the mundane theory of the Brahmans, in the multiplicity and superposition of worlds and the division of the earth into concentric continents, each separated by oceans of various fabulous liquids. Its notions of geography are at once fanciful and crude; and again borrowing from the Shastras its chronology, extends over boundless portions of time, but invests with the authority of history only those occurrences which have taken place since the birth of Gotama Buddha.

The Buddhists believe in the existence of *lokas*, or heavens, each differing in glory, and serving as the temporary residences of demigods and divinities, as well as of men whose etherialisation is but inchoate, and who have yet to visit the earth in further births and acquire in future transmigrations their complete attainment of Nirwana.. They believe likewise in the existence of hells which are the abodes of demons or tormentors, and in which the wicked undergo a purgatorial imprisonment preparatory to an extended probation upon earth. Here

man was just pushing off upon the lake, "do you see the style of these boats, in which our fishermen always put to sea, and that that spar is almost equivalent to a second canoe, which keeps the first from upsetting? It is precisely so with myself: I add on *your* religion to steady my *own*, *because I consider Christianity a very safe outrigger to Buddhism.*"

their torments are in proportion to their crimes, and although not eternal, their duration extends almost to the infinitude of eternity; those who have been guilty of the deadly sins of parricide, sacrilege, and defiance of the faith being doomed to the endurance of excruciating deaths, followed by instant revival and a repetition of their tortures without mitigation and apparently without end.[1]

It is one of the extraordinary anomalies of the system, that combined with these principles of self-reliance and perfectibility, Buddhism has incorporated to a certain extent the doctrine of fate or "necessity," under which it demonstrates that adverse events are the general results of *akusala* or moral demerit in some previous stage of existence. This belief, which lies at the very foundation of their religion, the Buddhists have so adapted to the rest of the structure as to avoid the inconsistency of making this directing power inherent in any Supreme Being, by assigning it as one of the attributes of matter and a law of its perpetual mutations.

Like all the leading doctrines of Buddhism, however, its theories on this subject are propounded with the usual admixture of modification and casuistry; only a portion of men's conduct is presumed to be exclusively controllable by *fate*—neither moral delinquency nor virtuous actions are declared to be altogether the products of an inevitable necessity; and whilst both the sufferings and the enjoyments of mortals are represented as the general consequences of merit in a previous stage of existence, even this fundamental principle is not without its exception, inasmuch as the vicissitudes are admitted to be partially the results of man's actions in this life, or of the influence of others from which his own deserts are insufficient to protect him. The main article, however, which admits neither of modification nor evasion, is that neither in heaven nor on earth can man escape from the

[1] DAVY'S *Account of the Interior of Ceylon*, p. 204.

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consequences of his acts; that morals are in their essence productive causes, without the aid or intervention of any higher authority; and hence forgiveness or atonement are ideas utterly unknown in the despotic dogmas of Buddha.

Allusion has already been made to the subtleties entertained by the priesthood, in connexion with the doctrine of the *metempsychosis*, as developed in their sacred books; but the exposition would be tedious to show the distinctions between their theories, and the opinions of transmigration entertained by the mass of the Singhalese Buddhists. The rewards of virtue and the punishment of vice are supposed to be equally attainable in this world; and according to the amount of either, which characterizes the conduct of an individual in one stage of being, will be the elevation or degradation into which he will be hereafter born.

Thus punishment and reward become equally fixed and inevitable: but retribution may be deferred by the intermediate exhibition of virtue, and an offering or prostration to Buddha, or an aspiration in the favour of faith in his name, will suffice to ward off punishment for a time, and even produce happiness in an intermediate birth; hence the most flagitious offender, by an act of reverence in dying, may postpone indefinitely the evil consequence of his crimes, and the indifference and apparent apathy which is a remarkable characteristic of the Singhalese who suffer death for their offences.[1]

To mankind in general Buddha came only as an adviser and a friend; but, as regards his own priesthood, he assumes all the authority of a lawgiver and chief. Spurning the desires and vanities of the world, he has taught them to aspire to no other reward for their

[1] Et vos barbaricos ritus, moremque sinistrum
Sacrorum Druidæ positis repetistis ab armis.
Solis nôsse deos, et cœli numina vobis
Aut solis nescire datum: nemora alta remoti
Incolitis lucis: *vobis auctoribus umbræ*
Non tacitas Erebi sedes Ditisque profundi
Pallida regna petunt: regit idem spiritus artus
Orbe alio: longæ (si canitis cognita) vitæ
Mors media est. Certè populi quos despicit Arctos
Felices errore suo, quos ille timorum
Maximus haud urget leti metus, etc.
LUCAN, l. i. 450 et seq.

labours than the veneration of the human race, as teachers of knowledge and examples of benevolence. Taking the abstract idea of perfect intelligence and immaculate virtue for a divinity, Buddhism accords honour to all in proportion to their approaches towards absolute wisdom, and as the realisation of this perfection is regarded as almost hopeless in a life devoted to secular cares, the priests of Buddha, on assuming their robe and tonsure, forswear all earthly occupations; subsist on alms, not in money, but in food; devote themselves to meditation and self-denial; and, being thus proclaimed and recognised as the most successful aspirants to Nirwana, they claim the homage of ordinary mortals, acknowledge no superior upon earth, and withhold even the tribute of a salutation from all except the members of their own religious order.

To mankind in general the injunctions of *Buddha* prescribe *a code of morality* second only to that of Christianity, and superior to every heathen system that the world has seen.[1] It forbids the taking of life from even the humblest created animal, and prohibits intemperance and incontinence, dishonesty and falsehood—vices which are referable to those formidable assailants, *rága* or concupiscence, *doso* or malignity, and *moha*, ignorance or folly.[2] These, again, involve all their minor modifications —hypocrisy and anger, unkindness and pride, ungenerous suspicion, covetousness, evil wishes to others, the betrayal of secrets, and the propagation of slander. Whilst all such offences are forbidden, every excellence is simultaneously enjoined—the forgiveness of injuries, the practice of charity, a reverence for virtue, and the cherishing of the learned; submission to discipline, veneration

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[1] "Je n'hésite pas à ajouter que, sauf le Christ tout seul, il n'est point, parmi les fondateurs de religion de figure, plus pure ni plus touchante que celle de Bouddha. Sa vie n'a point de tache."—*Le Bouddha*, par J. Barthelemy Saint-Hilaire, Introd. p. v.

[2] The Rev. Mr. Gogerly's *Notes on Buddhism*. Lee's *Ribeyro*, p. 267.

for parents, the care for one's family, a sinless vocation, contentment and gratitude, subjection to reproof, moderation in prosperity, submission under affliction, and cheerfulness at all times. "Those," said Buddha, "who practise all these virtues, and are not overcome by evil, will enjoy the perfection of happiness, and attain to supreme renown."[1]

Buddhism, it may be perceived from this sketch, is, properly speaking, less a form of religion than a school of philosophy; and *its worship*, according to the institutes of its founders, consists of an appeal to the reason, rather than an attempt on the imagination through the instrumentality of rites and parade. "Salvation is made dependent, not upon the practice of idle ceremonies, the repeating of prayers or of hymns, or invocations to pretended gods, but upon moral qualifications, which constitute individual and social happiness here, and ensure it hereafter."[2] In later times, and in the failure of Buddhism by unassisted arguments to ensure the observance of its precepts and the practice of its morals, the experiment has been made to arouse the attention and excite the enthusiasm of its followers by the adoption of ceremonies and processions; but these are declared to be only the innovations of priestcraft, and the Singhalese, whilst they unite in their celebration, are impatient to explain that such practices are less religious than secular, and that the Perrehera in particular, the chief of their annual festivals, was introduced, not in honour of Buddha, but as a tribute to the Kandyan kings as the patrons and defenders of the faith.[3]

In its formula, whatever alterations Buddhism may

[1] Discourse of Buddha entitled *Mangala.*

[2] Colonel SYKES, *Asiat. Journ.*, vol. xii. p. 266.

[3] FA HIAN describes the procession of Buddhists which he witnessed in the kingdom of Khotan, and it is not a little remarkable, that along with the image of Buddha were associated those of the Brahmanical deities *Indra* and *Brahma*, the *Lha* of the Thibetans and the *Toegri* of the Moguls.

have undergone in Ceylon are altogether external, and clearly referable to its anomalous association with the worship of its ancient rivals the Brahmans. These changes, however, are the result of proximity and association rather than of incorporation or adoption; and even now the process of expurgation is in progress with a view to the restoration of the pristine purity of the faith by a formal separation from the observances of Hinduism. The schismatic kings and the Malabar sovereigns introduced the worship of Vishnu and Shiva into the same temples with that of Buddha.[1] The innovation has been perpetuated; and to the present day the statues of these conflicting divinities are to be found within the same buildings: the Dewales of Hinduism are erected within the same inclosure as the Wiharas of the Buddhists; and the Kappoorales of the one religion officiate at their altars, almost beneath the same roof with the priests and neophytes of the other. But beyond this parade of their emblems, the worship of the *Hindu* deities throughout the Singhalese districts is entirely devoid of the obscenities and cruelty by which it is characterised on the continent of India; and it would almost appear as if these had been discontinued by the Brahmans in compliment to the superior purity of the worship with which their own had become thus fortuitously associated. The exclusive prejudices of caste were at the same remote period partially engrafted on the simpler and more generous discipline of Buddha; and it is only recently that any vigorous exertions have been attempted for their disseverance.

On comparing this system with other prevailing religions which divide with it the worship of the East, Buddhism at once vindicates its own superiority, not only by the purity of its code of morals, but by its freedom from the fanatical intolerance of the Mahometans and its abhorrent rejection of the revolting rites of the Brahmanical

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[1] See *ante*, Vol. I. Part III. ch. viii. p. 378.

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faith. But mild and benevolent as are its aspects and design, its theories have failed to realise in practice the reign of virtue which they proclaim. Beautiful as is the body of its doctrines, it wants the vivifying energy and soul which are essential to ensure its ascendancy and power. Its cold philosophy and thin abstractions, however calculated to exercise the faculties of anchorets and ascetics, have proved insufficient of themselves to arrest man in his career of passion and pursuit; and the bold experiment of influencing the heart and regulating the conduct of mankind by the external decencies and the mutual dependencies of morality unsustained by higher hopes and a faith that penetrates eternity, has proved in this instance an unredeemed and hopeless failure. The inculcation of the social virtues as the consummation of happiness here and hereafter, suggests an object sufficiently attractive for the bulk of mankind; but Buddhism presents along with it no adequate knowledge of the means which are indispensable for its attainment. In confiding all to the mere strength of the human intellect and the enthusiastic self-reliance and determination of the human heart, it makes no provision for defence against those powerful temptations before which ordinary resolution must give way; and affords no consoling support under those overwhelming afflictions by which the spirit is prostrated and subdued, when unaided by the influence of a purer faith and unsustained by its confidence in a diviner power. From the contemplation of the Buddhist all the awful and unending realities of a future life are withdrawn—his hopes and his fears are at once mean and circumscribed; the rewards held in prospect by his creed are insufficient to incite him to virtue; and its punishments too remote to deter him from vice. Thus, insufficient for time, and rejecting eternity, the utmost triumph of his religion is to live without fear and to die without hope.

Both socially and in its effects upon individuals, the result of the system in Ceylon has been apathy almost ap-

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proaching to infidelity. Even as regards the tenets of their creed, the mass of the population exhibit the profoundest ignorance and manifest the most irreverent indifference. In their daily intercourse and acts, morality and virtue, so far from being apparent as the rule, are barely discernible as the exception. Neither hopes nor apprehensions have proved a sufficient restraint on the habitual violation of all those precepts of charity and honesty, of purity and truth, which form the very essence of their doctrine; and in proportion as its tenets have been slighted by the people, its priesthood are disregarded and its temples in ruin.

No national system of religion, no prevailing superstition that has ever fallen under my observation presents so dull a level, and is so pre-eminently deficient in popular influences, as Buddhism amongst the Singhalese. It has its multitude of followers, but it is a misnomer to describe them as its *votaries*, for the term implies a warmth and fervour unknown to a native of Ceylon. He believes, or he thinks he believes, because he is of the same faith with his ancestors; but he looks on the religious doctrines of the various sects which surround him with a stolid indifference which is the surest indication of the little importance which he attaches to his own. The fervid earnestness of Christianity, even in its most degenerate forms, the fanatical enthusiasm of Islam, the proud exclusiveness of Brahma, and even the zealous warmth of other Northern faiths, are all emotions utterly foreign and unknown to the followers of Buddhism in Ceylon.

Yet, strange to tell, under all the icy coldness of this barren system, there burn below the unextinguished fires of another and a darker superstition, whose flames overtop the icy summits of the Buddhist philosophy, and excite a deeper and more reverential awe in the imagination of the Singhalese. As the Hindus in process of time superadded to their exalted conceptions of Brahma, and the benevolent attributes of Vishnu, those dismal dreams and apprehensions which embody themselves in the horrid worship of

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Shiva, and in invocations to propitiate the destroyer; so the followers of Buddha, unsatisfied with the vain pretensions of unattainable perfection, struck down by their internal consciousness of sin and insufficiency, and seeing around them, instead of the reign of universal happiness and the apotheosis of intellect and wisdom, nothing but the ravages of crime and the sufferings produced by ignorance, have turned with instinctive terror to propitiate the powers of evil, by whom alone such miseries are supposed to be inflicted, and to *worship the demons* and tormentors to whom their superstition is contented to attribute a circumscribed portion of power over the earth.

Demon worship prevailed amongst the Singhalese before the introduction of Buddhism by Mahindo. Some principle akin to it seems to be an aboriginal impulse of uncivilised man in his first and rudest conceptions of religion, engendered, perhaps, by the spectacle of cruelty and pain, the visitations of suffering and death, and the contemplation of the awful phenomena of nature—storms, torrents, volcanoes, earthquakes, and destruction. The conciliation of the powers which inflict such calamities, seems to precede, when it does not supplant, the adoration of the benevolent influence to which belong the creation, the preservation, and the conferment of happiness on mankind; and in the mind of the native of Ceylon this ancient superstition has maintained its ascendancy, notwithstanding the introduction and ostensible prevalence of Buddhism; for the latter, whilst it admits the existence of evil spirits, has emphatically prohibited their invocation, on the ground that any malignant influence they may exert over man is merely the consequence of his vices, whilst the cultivators of virtue may successfully bid them defiance. The demons here denounced are distinct from a class of demigods, who, under the name of *Yakshyos*, are supposed to inhabit the waters, and dwell on the sides of Mount Meru, and who are distinguished not only for gentleness and benevolence, but even by a veneration for Buddha, who, in one of his

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earlier transmigrations, was himself born under the form of a Yakshyo, and, attended by similar companions, traversed the world teaching righteousness. One section of these demigods, however, the *Rakshyos*, are fierce and malignant, and in these respects resemble the Yakkas or demons so much dreaded by the Singhalese, and who, like the *Ghouls* of the Mahometans, are believed to infest the vicinity of graveyards, or, like the dryads and hamadryads of the ancients, to frequent favourite forests and groves, and to inhabit particular trees, whence they sally out to seize on the passer by.[1] The Buddhist priests connive at demon worship because their efforts are ineffectual to suppress it, and the most orthodox Singhalese, whilst they confess its impropriety, are still driven to resort to it in all their fears and afflictions.

Independent of the malignant spirits or Yakkas, who are the authors of indefinite evil, the Singhalese have a demon or *Sanne* for each form of disease, who is supposed to be its direct agent and inflictor, and who is accordingly invoked for its removal; and others, who delight in the miseries of mankind, are to be propitiated before the arrival of any event over which their pernicious influence might otherwise prevail. Hence, on every domestic occurrence, as well as in every domestic calamity, the services of the

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[1] Travellers from Point de Galle to Colombo, in driving through the long succession of gardens and plantations of coco-nuts which the road traverses throughout its entire extent, will not fail to observe fruit-trees of different kinds, round the stem of which *a band of leaves has been fastened* by the owner. This is to denote that the tree has been devoted to a demon; and sometimes to Vishnu or the Kattregam dewol. Occasionally these dedications are made to the temples of Buddha, and even to the Roman Catholic altars, as to that of St. Anne of Calpentyn. This ceremony is called *Gok-bandeema*, "the tying of the tender leaf," and its operation is to protect the fruit from pillage till ripe enough to be plucked and sent as an offering to the divinity to whom it has thus been consecrated. There is reason to fear, however, that on these occasions the devil is, to some extent, defrauded of his due, as the custom is, after applying a few only of the finest as an offering to the evil one, to appropriate the remainder to the use of the owner. When coco-nut palms are so preserved, the fruit is sometimes converted into oil and burned before the shrine of the demon. The superstition extends throughout other parts of Ceylon; and so long as the wreath continues to hang upon the tree, it is presumed that no thief would venture to plunder the garden.

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Kattadias or devil-priests are to be sought, and their ceremonies performed, generally with observances so barbarous as to be the most revolting evidence still extant of the uncivilised habits of the Singhalese. Especially in cases of sickness and danger, the assistance of the devil-dancer is implicitly relied on: an altar, decorated with garlands, is erected within sight of the patient, and on this an animal, frequently a cock, is to be sacrificed for his recovery. The dying man is instructed to touch and dedicate to the evil spirit the wild flowers, the rice, and the flesh, which have been prepared as the *pidaneys* or offerings to be made at sunset, at midnight, and the morning; and in the intervals the dancers perform their incantations, habited in masks and disguises to represent the demon which they personate, as the immediate author of the patient's suffering. In the frenzy of these orgies, the Kattadia having feigned the access of inspiration from the spirit he invokes, is consulted by the friends of the afflicted, and declares the nature of his disease, and the probability of its favourable or fatal termination. At sunrise, the ceremony closes by an exorcism chanted to disperse the demons who have been attracted by the rite; the devil-dancers withdraw with the offerings, and sing, as they retire, the concluding song of the ceremony, "that the sacrifice may be acceptable and the life of the sufferer extended."

In addition to this Yakka worship, which is essentially indigenous in Ceylon, the natives practise the invocation of a distinct class of demons, their conceptions of which are evidently borrowed from the debased ceremonies of Hinduism, though in their adoption they have rejected the grosser incidents of its ritual, and replaced them with others less cruel, but by no means less revolting. The Capuas, who perform ceremonies in honour of these strange gods, are of a higher rank than the Kattadias, who conduct the incantations to the Yakkas, and they are

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more or less connected with the Dewales and temples of Hinduism. The spirits in whose honour these ceremonies are performed, are all foreign to Ceylon. Some, such as Kattregam and Pattine, are borrowed from the mythology of the Brahmans; some are the genii of fire and other elements of the universe, and others are deified heroes; but the majority are dreaded as the inflictors of pestilence and famine, and propitiated by rites to avert the visitations of their malignity.

The ascendancy of these superstitions, and the anomaly of their association with the religion of Buddha, which has taken for its deity the perfection of wisdom and benevolence, present one of the most signal difficulties with which Christianity has had, at all times, to contend in the effort to extend its influences throughout Ceylon. The Portuguese priesthood discovered that, however the Singhalese might be induced to profess the worship of Christ, they adhered with timid tenacity to their ancient demonology. The Dutch clergy, in their reiterated lamentations over the failure of their efforts for conversion, have repeatedly recorded the fact, that however readily the native population might be brought to abjure their belief in the doctrines of Buddha, no arguments or expedients had proved effectual to overcome their terror of the demons, or check their propensity to resort on every emergency to the ceremonies of the Capuas, the dismal rites of the devil-dancers. The Wesleyans, the Baptists, and other missionaries, who in later times have made the hamlets and secluded districts of Ceylon the scene of their unwearied labours, have found, with equal disappointment, that to the present hour the villagers and the peasantry are as powerfully attracted as ever by this strong superstition, bearing on their person the charms calculated to protect them from the evil eye of the demon, consulting the astrologers and the Capuas on every domestic emergency, solemnizing their marriages under their auspices,

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[1] Hough. *Hist. Christ. in India*, vol. iv. b. xii. ch. v.

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and requiring their presence at the birth of their children, who, together with their mother, are not unfrequently dedicated to the evil spirits, whom they dread.[1]

As regards Buddhism itself, whilst there is that in the tenets and genius of Brahmanism which proclaims an active resistance to any other form of religion, Christianity in the southern expanse of Ceylon has to encounter an obstacle still more embarrassing in the habitual apathy and listless indifference of the Buddhists. Brahmanism in its constitution and spirit is essentially exclusive and fanatical, jealous of all conflicting faiths, and strongly disposed to persecution. Buddhism, on the other hand, in the strength of its self-righteousness, extends a latitudinarian liberality to every other belief, and exhibits a Laodicean indifference towards its own. Whilst Brahmanism is a science confided only to an initiated priesthood; and the Vedas and the Shastras in which its precepts are embodied are kept with jealousy from the profane eye of the people, Buddhism, rejoicing in its universality, aspires to be the religion of the multitude, throws open its sacred pages without restriction, and encourages their perusal as a meritorious act of devotion. The despotic ministers of Brahma affect to be versed only in arcana and mystery, and to issue their dicta from oracular authority; but the priesthood of Buddha assume no higher functions than those of teachers of ethics, and claim no loftier title than that of "the clergy of reason."[2]

In the character of the Singhalese people there is to be traced much of the genius of their religion. The same passiveness and love of ease which restrain from active exertion in the labours of life, find a counterpart in the adjustment by which virtue is limited to abstinence, and

[1] HARVARD's *History of the Wesleyan Mission in Ceylon*, Introd., p. iii.

[2] The sect of the *Lao Tsen*, or "Doctors of Reason," whom LANDRESSE regards as a development of Buddhism, prevailed in Thibet and the countries lying between China and India in the fifth and sixth centuries; and FA HIAN always refers to them as the "*Clergy of Reason.*"—*Foĕ Kouĕ Ki*, chap. xxxviii.

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worship to contemplation; with only so much of actual ceremonial as may render visible to the eye what would be otherwise inaccessible to the mind. The same love of repose which renders sleep and insensibility the richest blessings of this life, anticipates torpor, akin to extinction, as the supremest felicity of the next. In common with all other nations they deem some form of religious worship indispensable, but, contrary to the usage of most, they are singularly indifferent as to what that particular form is to be; leaving it passively to be determined by the conjunction of circumstances, the accident of locality, and the influence of friends or worldly prospects of gain. Still, in the hands of the Christian missionary, they are by no means the plastic substance which such a description would suggest—capable of being moulded *into* any form, or retaining permanently any casual impression—but rather a yielding fluid which adapts its shape to that of the vessel into which it may happen to be poured, without any change in its quality or any modification of its character.

From this unexcitable temperament of the people, combined with the exalted morals which form the articles of their belief, result phenomena which for upwards of three hundred years have more or less baffled the exertions of all who have laboured for the overthrow of their national superstition and the elevation of Christianity in its stead. The precepts of the latter, when offered to the natives apart from the divinity of their origin, present something in appearance so nearly akin to their own tenets that they were slow to discern the superiority. If Christianity requires purity and truth, temperance, honesty and benevolence, these are already discovered to be enjoined with at least equal impressiveness in the precepts of Buddha. The Scripture commandment forbidding murder is supposed to be analogous to the Buddhist prohibition *to kill*[1];

[1] The order of Buddha not to take away life is imperative and unqualified as regards the priesthood; but to mankind in general it forms one of his "*Sikshapada*," or *advices*, and admits of modification under certain

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and where the law and the Gospel alike enforce the love of one's neighbour as the love of one's self, Buddhism insists upon charity as the basis of worship, and calls on its own followers "to appease anger by gentleness, and overcome evil by good."[1]

Thus the outward concurrence of Christianity in those points on which it agrees with their own religion, has proved more embarrassing to the natives than their perplexity as to others in which it essentially differs; till at last, too timid to doubt and too feeble to inquire, they cling with helpless tenacity to their own superstition, and yet subscribe to the new faith simply by adding it on to the old.

Combined with this state of irresolution a serious obstacle to the acceptance of reformed Christianity by the Singhalese Buddhists has arisen from the differences and disagreements between the various churches by whose ministers it has been successively offered to them. In the persecution of the Roman Catholics by the Dutch, the subsequent supercession of the Church of Holland by that of England, the rivalries more or less apparent between the Episcopalians and Presbyterians, and the peculiarities which separate the Baptists from the Wesleyan Methodists —all of whom have their missions and representatives in Ceylon—the Singhalese can discover little more than that they are offered something still doubtful and unsettled, in exchange for which they are pressed to surrender their

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contingencies. A priest who should take away the life of an animal, or even an insect, under any circumstances, would be guilty of the offence denominated *Pachittvya*, and subject to penal discipline; but to take away human life, to be accessory to murder, or to encourage to suicide, amounts to the sin of *Parājika*,, and is visited with permanent expulsion from the order. As regards the laity, the use of animal food is not forbidden, provided the individual has not himself been an agent in depriving it of life. The doctrine of prohibition, however, although thus regulated, like many others of the Buddhists, by subtleties and sophistry, has proved an obstacle in the way of the Missionaries; and, coupled with the permission in the Scriptures "to slay and eat," it has not failed to operate prejudicially to the spread of Christianity.

[1] From the Singhalese book, the "*Dharmma Padan*," or Footsteps of Religion, portions of which are translated in "*The Friend*," Colombo, 1840.

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own ancient superstition. Conscious of their inability to decide on what has baffled the wisest of their European teachers to reconcile, they hesitate to exchange for an apparent uncertainty that which has been unhesitatingly believed by generations of their ancestors, and which comes recommended to them by all the authority of antiquity; and even when truth has been so far successful as to shake their confidence in their national faith, the choice of sects which has been offered to them leads to utter bewilderment as to the peculiar form of Christianity with which they may most confidingly replace it.[1]

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[1] A narrative of the efforts made by the Portuguese to introduce Christianity, and by the Dutch to establish the reformed Religion, will be found in Sir J. EMERSON TENNENT'S *Christianity in Ceylon*; together with an exposition of the systems adopted by the European and American missions, and their influence on the Hindu and Buddhist races, respectively.

Those who seek to pursue the study of Buddhism, its tenets and economies, as it exhibits itself in Ceylon, will find ample details in the two profound works published by Mr. R. SPENCE HARDY: *Eastern Monachism*, Lond. 1850, and *A Manual of Buddhism, in its Modern Development*, Lond. 1853.

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PART V.

MEDIÆVAL HISTORY.

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CHAPTER I.

CEYLON AS KNOWN TO THE GREEKS AND ROMANS.

ALTHOUGH mysterious rumours of the wealth and wonders of India had reached the Western nations in the heroic ages, and although travellers at a later period returning from Persia and the East had spread romantic reports of its vastness and magnificence, it is doubtful whether Ceylon had been heard of in Europe[1] even

[1] Nothing is more strikingly suggestive of the extended renown of Ceylon and of the different countries which maintained an intercourse with the island, than the number and dissimilarity of the names by which it has been known at various periods throughout Europe and Asia. So remarkable is this peculiarity, that LASSEN has made "the names of Taprobane" the subject of several learned disquisitions (*De Taprobane Insula veter. cogn. Dissert.* sec. 2, p. 5; *Indische Alterthumskunde,* vol. i. p. 200, note viii. p. 212, &c.); and BURNOUF has devoted two elaborate essays to their elucidation, *Journ. Asiat.* 1826, vol. viii. p. 129. *Ibid.*, 1857, vol. xxxiii. p. 1.

In the literature of the Brahmans, Lanka, from having been the scene of the exploits of Rama, is as renowned as Ilion in the great epic of the Greeks. "Taprobane," the name by which the island was first known to the Macedonians, is derivable from the Pali "Tamba panni." The origin of the epithet will be found in the *Mahawanso,* ch. vii. p. 56: and it is further noticed in the present work, Vol. I. P. I. ch. i. p. 17, and P. III. ch. ii. p. 330.—It has likewise been referred to the Sanskrit "*Tambrapani;*" which, according to LASSEN, means "the great pond," or "the pond covered with the red lotus," and was probably associated with the gigantic tanks for which Ceylon is so remarkable. In later times Taprobane was exchanged for Simundu, Palai-simundu, and Salike, under which names it is described by PTOLEMY, the author of the *Periplus,* and by MARCIANUS of Heraclæa. *Palai-simundu,* LASSEN conjectures to be derived from the Sanskrit *Pali-simanta,* "the head of the sacred law," from Ceylon having become the great centre of the Buddhist faith (*De Taprob.,* p. 16; *Indische Alter.* vol. i. p. 200); and *Salike* he regards merely as a seaman's corruption of "Sinhala or Sihala," the name chosen by the Singhalese themselves, and signifying "the dwelling place of lions." BURNOUF suggests whether it may not be *Sri-Lanka,* or "Lanka the Blessed."

Sinhala, with the suffix of "diva," or "dwipa" (island), was subsequently converted into "Silan-dwipa" and "Seren-diva," whence the "Serendib" of the Arabian navigators and their romances; and this in later times was contracted into Zeilan by the Portuguese, Ceylan by the Dutch, and Ceylon by the English. VINCENT, in his *Commentary on the Periplus of the Erythræan Sea,* vol. ii. p. 493, has enumerated a variety of other names borne by the island; and to all these might be further added

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by name till the companions of Alexander the Great, returning from his Indian expedition, brought back accounts of what they had been told of its elephants and ivory, its tortoises and marine monsters.[1]

So vague and uncertain was the information thus obtained, that STRABO, writing upwards of two centuries later, manifests irresolution in stating that Taprobane was an island[2]; and POMPONIUS MELA, who wrote early in the first century of the Christian era, quotes as probable the conjecture of HIPPARCHUS, that it was not in reality an island, but the commencement of a south-eastern continent[3]; an opinion which PLINY records as an error that had prevailed previous to his own time, but which he had been enabled to correct by the information received from the ambassador who had been sent from Ceylon to the Emperor Claudius.[4]

In the treatise *De Mundo*, which is ascribed to ARISTOTLE[5], Taprobane is mentioned incidentally as of less size than Britain; and this is probably the earliest his-

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those assigned to it in China, in Siam, in Hindustan, Kashmir, Persia, and other countries of the East. The learned ingenuity of BOCHART applied a Hebrew root to expound the origin of Taprobane (*Geogr. Sac.* lib. ii. ch. xxviii.); but the later researches of TURNOUR, BURNOUF, and LASSEN have traced it with certainty to its Pali and Sanskrit origin.

[1] GOSSELIN, in his *Recherches sur la Géographie des Anciens*, tom. iii. p. 291, says that Onesicritus, the pilot of Alexander's fleet, "avoit visité la Taprobane pendant un nouveau voyage qu'il eut ordre de faire." If so, he was the first European on record who had seen the island; but I have searched unsuccessfully for any authority to sustain this statement of GOSSELIN.

[2] STRABO, l. ii. c. i. s. 14, c. v. s. 14, εἶναί φασι νῆσον; l. xv. c. i. s. 14. OVID was more confident, and sung of—

". . . . . Syene
Aut ubi Taprobanen Indica cingit aqua."
Epist. ex Ponto, i. 80.

[3] "Taprobanen aut grandis admodum insula aut prima pars orbis alterius Hipparcho dicitur."—P. MELA, iii. 7. "Dubitare poterant juniores num revera insula esset quam illi pro veterum Taprobane habebant, si nemo eousque repertus esset qui eam circumnavigasset: sic enim de nostra quoque Brittania dubitatum est essetne insula antequam illam circumnavigasset Agricola."—*Dissertatio de Ætate et Auctore Peripli Maris Erythræi;* HUDSON, *Geographiæ Veter. Scrip. Græc. Min.*, vol. i. p. 97.

[4] PLINY, l. vi. c. 24.

[5] I have elsewhere disposed of the alleged allusions of Sanchoniathon to an island which was obviously meant for Ceylon. (See Note (A) end of this chapter.) The authenticity of the treatise *De Mundo*, as a production of ARISTOTLE, is somewhat doubtful (SCHŒLL, *Literat. Grecque*, liv. iv. c. xl.); and it might add to the suspicion of its being a modern composition, that Aristotle should do no more than mention the name and

torical notice of Ceylon that has come down to us[1] as the memoirs of Alexander's Indian officers, on whose

size of a country of which Onesicritus and Nearchus had just brought home accounts so surprising; and that he should speak of it with confidence as an island, although the question of its insularity remained somewhat uncertain at a much later period.

[1] FABRICIUS, in the supplemental volume of his *Codex Pseudepigraphi veteris Testamenti*, Hamb., A.D. 1723, says, "Samarita, Genesis, viii. 4, tradit Noæ arcam requievisse super montem τῆς Serendib sive Zeylan."—P. 30; and it was possibly upon this authority that it has been stated in KITTO's *Cyclopædia of Biblical Literature*, vol. i. p. 199, as "a curious circumstance that in Genesis, viii. 4, the Samaritan Pentateuch has Sarandib, the Arabic name of Ceylon," instead of Ararat, as the resting place of the ark. Were this true, it would give a triumph to speculation, and serve by a single but irresistible proof to dissipate doubt, if there were any, as to the early intercourse between the Hebrews and that island as the country from which Solomon drew his triennial supplies of ivory, apes, and peacocks (1 Kings, x. 22). Assuming the correctness of the opinion that the Samaritan Pentateuch is as old as the separation of the tribes in the reign of Rehoboam, B.C. 975-958, this would not only furnish a notice of Ceylon far anterior to any existing authority; but would assign an antiquity irreconcilable with historical evidence as to its comparatively modern name of "Serendib." The interest of the discovery would still be extraordinary, even if the Samaritan Pentateuch be referred to the later date assigned to it by Frankel, who adduces evidence to show that its writer had made use of the Septuagint. The author of the article in the *Biblical Cyclopædia* is however in error. Every copy of the Samaritan Pentateuch, both those printed in the Paris *Polyglot* and in that of WALTON, as well as the five MSS. in the Bodleian Library at Oxford, which contain the eighth chapter of Genesis, together with several collations of the Hebrew and Samaritan text, make no mention of Sarandib, but all exhibit the word "Ararat" in its proper place in the eighth chapter of Genesis. "Ararat" is also found correctly in BLAYNEY's *Pentat. Hebræo-Samarit.*, Oxford, 1790.

But there is another work in which "Sarandib" does appear in the verse alluded to. PIETRO DELLA VALLE, in that most interesting letter in which he describes the manner in which he obtained at Damascus, in A.D. 1616, a manuscript of the Pentateuch on parchment in the Hebrew language, but written in Samaritan characters; relates that along with it he procured *another* on paper, in which not only the letters, but the language, was Samaritan—"che non solo è scritto con lettere Samaritane, ma in lingua anche propria de' Samaritani, che è un misto della Ebraica e della Caldea." — *Viaggi, &c.*, Lett. da Aleppo, 15. di Giugno A.D. 1616.

The first of these two manuscripts is the Samaritan Pentateuch, the second is the "*Samaritan version*" of it. The author and age of the second are alike unknown; but it cannot, in the opinion of Frankel, date earlier than the second century, or a still later period. (DAVISON's *Biblical Criticism*, vol. i. ch. xv. p. 242.) Like all ancient targums, it bears in some particulars the character of a paraphrase; and amongst other departures from the literal text of the original Hebrew, the translator, following the example of Onkelos and others, has substituted modern geographical names for some of the more ancient, such as *Gerizim* for Mount Ebal (Deut. xxvii. 4), *Paneas* for Dan, and *Ascalon* for Gerar; and in the 4th verse of the viiith chapter of Genesis he has made the ark to rest "*upon the mountains of Sarandib.*" Onkelos

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authority Aristotle (if he be the author of the treatise "*De Mundo*") must have written, survive only in fragments, preserved by the later historians and geographers.

From their compilations, however, it appears that the information concerning Ceylon collected by the Macedonian explorers of India, was both meagre and erroneous. ONESICRITUS, as he is quoted by Strabo and Pliny, propagated exaggerated statements as to the dimensions of the island[1], and the number of herbivorous cetacea[2] found in its seas; the elephants he described as far surpassing those of continental India both in courage and in size.[3]

MEGASTHENES, twenty years after the death of Alexander the Great, was accredited as an ambassador from Seleucus Nicator to the court of Sandracottus, or Chandra-Gupta, the King of the Prasii, from whose country Ceylon had been colonised two centuries before by the expedition under Wijayo.[4] It was, perhaps,

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in the same passage has *Kardu* in place of Ararat. See WALTON'S *Polyglot*, vol. i. p. 31; BASTOW, *Bibl. Dict.* 1847, vol. i. p. 71.

According to the *Mahawanso*, the epithet of Sihale-dwipa, the *island of lions*, was conferred upon Ceylon by the followers of Wijayo, B.C. 543 (*Mahawanso*, ch. vii. p. 51), and from this was formed, by the Arabian seamen, the names Silan-dip and Serandib. The occurrence of the latter word, therefore, in the "Samaritan Pentateuch," if its antiquity be referable to the reign of Rehoboam, would be inexplicable; whereas no anachronism is involved by its appearance in the "Samaritan *version*," which was not written till many centuries after the Wijayan conquest.

There is another manuscript, written on bombycine, in the Bodleian Library, No. 345, described as an Arabic version of the Pentateuch, written between the years 884 and 885 of the Hejira, A.D. 1479 and 1480, and ascribed to Aba Said, son of Abul Hassan, "in eo continetur versio Arabica Pentateuchi quæ ex textu Hebræico-Samaritano *non ex versione illa quæ dialecto quadam peculiari Samaritanis quondam vernacula Scripta est*."—*Cat. Orient. MSS.* vol. i. p. 2. In this manuscript, also, the word *Sarendip*, instead of Ararat, occurs in the passage in Genesis descriptive of the resting of the ark.

[1] These early errors as to the size and position of Ceylon will be found explained elsewhere. See Vol. I. P. I. ch. i. p. 8.

[2] STRABO, xv. p. 691. The animal referred to by the informants of Onesicritus was the dugong, whose form and attitudes gave rise to the fabled mermaid. See ÆLIAN, lib. xvi. ch. xviii., who says it has the face of a woman and spines that resemble hair.

[3] PLINY, lib. vi. ch. 24.

[4] See Vol. I. P. III. ch. iii. p. 336.

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from the latter circumstance and the communication subsequently maintained between the insular colony and the mother country, that Megasthenes, who never visited any part of India south of the Ganges, and who was, probably, the first European who ever beheld that renowned river [1], was nevertheless enabled to collect many particulars relative to the interior of Ceylon. He described it as being divided by a river (the Mahawelli-ganga?) into two sections, one infested by wild beasts and elephants, the other producing gold and gems, and inhabited by a people whom he called Palæogoni [2], a hellenized form of *Pali-Putra*, "the sons of the Pali," the first Prasian colonists.

Such was the scanty knowledge regarding India communicated to Europe by those who had followed the footsteps of conquest into that remote region; and although eighteen centuries elapsed from the death of Alexander the Great before another European power sought to establish its dominion in the East, a new passion had been early implanted, the cultivation of which was in the highest degree favourable to the acquisition and diffusion of geographical knowledge. In an age before the birth of history [3], the adventurous Phœnicians, issuing from the Red Sea, in their ships,

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[1] ROBERTSON'S *Ancient India*, sec. ii.

[2] SCHWANBECK'S *Megasthenes*, *Fragm.* xviii.; SOLINUS POLYHISTOR, liii. 3; PLINY, lvi. ch. 24. ÆLIAN, in compiling his *Natura Animalium*, has introduced the story told by MEGASTHENES, and quoted by STRABO, of cetaceous animals in the seas of Ceylon with heads resembling oxen and lions; and this justifies the conjecture that other portions of the same work referring to the island may have been simultaneously borrowed from the same source. SCHWANBECK, apparently on this ground, has included among the *Fragmenta incerta* those passages from ÆLIAN, lib. xvi. ch. 17, 18, in which he says, and truly, that in Taprobane there were no cities, but from five to seven hundred villages built of wood, thatched with reeds, and occasionally covered with the shells of large tortoises. The sea coast then as now was densely covered with palm-trees (evidently coco-nut and Palmyra), and the forests contained elephants so superior to those of India that they were shipped in large vessels and sold to the King of Calinga (Northern Circars). The island, he says, is so large that "those in the maritime districts never hunted in the interior, and those in the interior had never seen the sea."

[3] A compendious account of the early trade between India and the

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had reached the shores of India, and centuries afterwards their experienced seamen piloted the fleets of Solomon in search of the luxuries of the East.[1]

Egypt, under the Ptolemies, became the seat of that opulent trade which it had been the aim of Alexander the Great to divert to it from Syria. Berenice was built on the Red Sea, as an emporium for the ships engaged in Indian voyages, and Alexandria excelled Tyre in the magnitude and success of her mercantile operations.

The conquest of Egypt by Augustus, so far from checking, served to communicate a fresh impulse to the intercourse with India, whence all that was costly and rare was collected in wanton profusion, to minister to the luxury of Rome. A bold discovery of the same period imparted an entirely new character to the navigation of the Indian Ocean. The previous impediment to trade had been the necessity of carrying it on in small vessels, that crept cautiously along the windings of the shore, the crews being too ignorant and too timid to face the dangers of the open sea. But the courage of an individual at length solved the difficulty, and dissipated the alarm. Hippalus, a seaman in the reign of Claudius, observing the steady prevalence of the monsoons[2], which blew over the Indian Ocean alternately from east to west, dared to trust himself to their in-

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countries bordering on the Mediterranean will be found in PARDESSUS's *Collection des Lois Maritimes antérieures au XVIII*e *siècle,* tom. i. p. 9.

[1] It has been conjectured, and not without reason, that it may possibly have been from Ceylon and certainly from Southern India that the fleets of Solomon were returning when "once in every three years came the ships of Tarshish, bringing gold and silver, ivory, apes, and peacocks."—*I Kings,* x. 22, *II Chron.* xx. 21. An exposition of the reasons for believing that the site of Tarshish may be recognised in the modern Point de Galle will be found in a subsequent chapter descriptive of that ancient emporium. See also Note A at the end of this chapter.

[2] Arabic "*maussam.*" I believe the root belongs to a dialect of India, and signifies "seasons." VINCENT fixes the discovery of the monsoons by Hippalus about the year A.D. 47, although it admits of no doubt that the periodical prevalence of the winds must have been known long before, if not partially taken advantage of by the seamen of Arabia and India.—*Periplus, &c.,* vol. ii. pp. 24—57.

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fluence, and departing from the coast of Arabia, he stretched fearlessly across the unknown deep, and was carried by the winds to Muziris, a port on the coast of Malabar, the modern Mangalore.

An exploit so adventurous and so triumphant, rendered Hippalus the Columbus of his age, and his countrymen, to perpetuate his renown, called the winds which he had mastered by his name.[1] His discovery gave a new direction to navigation, it altered the dimensions and build of the ships frequenting those seas [2], and imparted so great an impulse to trade, that within a very brief period it became a subject of apprehension at Rome, lest the empire should be drained of its specie to maintain the commerce with India. Silver to the value of nearly a million and a half sterling, being annually required to pay for the spices, gems, pearls, and silks, imported through Egypt.[3] An extensive acquaintance was now acquired with the sea-coast of India, and the great work of Pliny, compiled less than fifty years after the discovery of Hippalus, serves to attest the additional knowledge regarding Ceylon which had been collected during the interval.

Pliny, writing in the first century, puts aside the fabulous tales previously circulated concerning the island [4]; he gives due credit to the truer accounts of Onesicritus and Megasthenes, and refers to the later

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[1] *Periplus, &c.*, HUDSON, p. 32; PLINY, lib. vi. ch. 26. A learned disquisition on the discovery of the monsoons will be found in VINCENT's *Commerce of the Ancients*, vol. i. pp. 47, 253; vol. ii. pp. 49, 467; ROBERTSON's *India*, sec. 2.

[2] PLINY, lib. vi. ch. 24.

[3] PLINY, lib. vi. ch. 26. The nature of this rich trade is fully described by the author of the *Periplus of the Erythrean Sea*, who was himself a merchant engaged in it.

[4] I have not thought it necessary to advert to the romance of JAMBULUS, the scene of which has been conjectured, but without any justifiable grounds, to be laid in Ceylon; and which is strangely incorporated with the authentic work of DIODORUS SICULUS, written in the age of Augustus. DIODORUS professes to give it as an account of the *recent discovery* of an island to which it refers; a fact sufficiently demonstrative of its inapplicability to Ceylon, the existence of which had been known to the Greeks three hundred years before. It is the story of a merchant made captive by pirates and carried to Æthiopia, where, in compliance with a solemn rite, he and a com-

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works of ERATOSTHENES and ARTEMIDORUS[1] the geographers, as to its position, its dimensions, its cities, its natural productions, and as to the ignorance of navigation exhibited by its inhabitants. All this, he says, was recorded by former writers, but it had fallen to his lot to collect information from natives of Ceylon who had visited Rome during his own time under singular circumstances. A ship had been despatched to the coast of Arabia to collect the Red Sea revenues, but having been caught by the monsoon it was carried to Hippuros, the modern Kudra-mali, in the north-west of Ceylon, near the pearl banks of Manaar. Here the officer in command was courteously received by the king, who, struck with admiration of the Romans and eager to form an alliance with them, despatched an embassy to Italy, consisting of a Raja and suite of three persons.[2]

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panion were exposed in a boat, which, after a voyage of four months, was wafted to one of the Fortunate Islands, in the Southern Sea, where he resided seven years, whence having been expelled, he made his way to Palibothra, on the Ganges, and thence returned to Greece. In the pretended account of this island given by JAMBULUS I cannot discover a single attribute sufficient to identify it with Ceylon. On the contrary, the traits which he narrates of the country and its inhabitants, when they are not manifest inventions, are obviously borrowed from the descriptions of the continent of India, given by CTESIAS and MEGASTHENES. PRINSEP, in his learned analysis of the Sanchi Inscription, shows that what JAMBULUS says of the alphabet of his island agrees minutely with the character and symbols on the ancient Buddhist lats of Central India.—*Journ. Asiat. Soc. Ben.*, vol. vi. p. 476. WILFORD, in his *Essay on the Sacred Isles of the West*, *Asiat. Res.* x. 150, enumerates the statements of JAMBULUS which might possibly apply to Sumatra, but certainly not to Ceylon, an opinion in which he had been anticipated by RAMUSIO, vol. i. p. 176. LASSEN, in his *Indische Alterthumskunde*, vol. iii. p. 270, assigns his reasons for believing that Bali, to the east of Java, must be the island in which JAMBULUS laid the scene of his adventures.—DIODORUS SICULUS, lib. ii. ch. lv., &c. An attempt has also been made to establish an identity between Ceylon and the island of Panchæa, which Diodorus describes in the Indian Sea, between Arabia and Gedrosia (lib. v. 41, &c.); but the effort has been unsuccessful. See GROVER'S *Voice from Stonehenge*, P. i. p. 95.

[1] PLINY, lib. xxii. ch. liii. iv. ch. xxiv. vii. ch. ii.

[2] "Legatos quatuor misit principe eorum Rachia."—PLINY, lib. vi. c. 24. This passage is generally understood to indicate four ambassadors, of whom the principal was one named Rachias. CASIE CHITTY, in a learned paper on the early *History of Jaffna*, offers another conjecture that "Rachia" may mean *Arachia*, a Singhalese designation of rank which exists to the present day; and in support of his hypothesis he instances the coincidence that "at a later period a similar functionary was despatched by the King Bhuwaneka-Bahu VIII.

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The Singhalese king of whom this is recorded was probably Chanda-Mukha-Siwa, who ascended the throne A.D. 44, and was deposed and assassinated by his brother A.D. 52. He signalised his reign by the construction of one of those gigantic tanks which still form the wonders of the island.[1] From his envoys Pliny learned that Ceylon then contained five hundred towns (or more properly villages), of which the chief was Palæsimunda, the residence of the sovereign, with a population of two hundred thousand souls.

They spoke of a lake called Megisba, of vast magnitude, and giving rise to two rivers, one flowing by the capital and the other northwards, towards the continent of India, which was most likely an exaggerated account of some of the great tanks, possibly that of Tissa Weva, in the vicinity of Anarajapoora. They described the coral which abounds in the Gulf of Manaar; and spoke of marble, with colours like the shell of the tortoise; of pearls and precious stones; of the luxuri-

as ambassador to the court of Lisbon." —*Journal Ceylon Asiat. Soc.*, p. 74, 1848. The event to which he refers is recorded in the *Rajavali*: it is stated that the king of Cotta, about the year 1540, "caused a figure of the prince his grandson to be made of gold, and sent the same under the care of *Sallappoo Arachy*, to be delivered to the King of Portugal. The Arachy having arrived and delivered the presents to the King of Portugal, obtained the promise of great assistance," &c.—*Rajavali*, p. 286. See also VALENTYN, *Oud en Nieuw Oost-Indien*, ch. vi.; TURNOUR'S *Epitome*, p. 49; RIBEYRO'S *History*, trans. by Lee, ch. v. But as the embassy sent to the Emperor Claudius would necessarily have been deputed by one of the kings of the Wijayan dynasty, it is more than probable that the rank of the envoy was Indian rather than Singhalese, and that "Rachia" means *raja* rather than *arachy*.

It may, however, be observed that Rackha is a name of some renown in Singhalese annals. Rackha was the general whom Prakrama Bahu sent to reduce the south of Ceylon when in arms in the 12th century (*Mahawanso*, ch. lxxiii.); and it is also the name of one of the heroes of the Paramas.—WILFORD, *As. Res.*, vol. ix. p. 41.

[1] *Mahawanso*, ch. xxx. p. 218; TURNOUR'S *Epitome*, p. 21; AMMIANUS MARCELLINUS mentions another embassy which arrived from Ceylon in the reign of the Emperor Julian, l. xx. c. 7, and which consequently must have been despatched by the king Upa-tissa II. I have elsewhere remarked, that it was in this century that the Singhalese appear to have first commenced the practice of sending frequent embassies to distant countries, and especially to China. (See chapter on the Knowledge of Ceylon possessed by the Chinese.)

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ance of the soil, the profusion of all fruits except that of the vine, the natural wealth of the inhabitants, the mildness of the government, the absence of vexatious laws, the happiness of the people, and the duration of life, which was prolonged to more than one hundred years. They spoke of a commerce with China, but it was evidently overland, by way of India and Tartary, the country of the Seres being visible, they said, beyond the Himalaya mountains.[1] The ambassadors described the mode of trading among their own countrymen precisely as it is practised by the Veddahs in Ceylon at the present day[2]; the parties to the barter being concealed from each other, the one depositing the articles to be exchanged in a given place, and the other, if they agree to the terms, removing them unseen, and leaving behind what they give in return.

It is impossible to read this narrative of Pliny without being struck with its fidelity to truth in many particulars; and even one passage, to which exception has been taken as an imposture of the Singhalese envoys, when they manifested surprise at the quarters in which the sun rose and set in Italy, has been referred[3] to the peculiar system of the Hindus, in whose maps north and south are left and right; but it may be explained by the fact of the sun passing over head in Ceylon, in his transit to the northern solstice; instead of hanging about the south, as in Italy, after acquiring some elevation above the horizon.

The rapid progress of navigation and discovery in the Indian seas, within the interval of sixty or seventy years which elapsed between the death of Pliny and the compilation of the great work of Ptolemy, is in no instance more strikingly exhibited than on comparing the information concerning Taprobane, which is given by the latter in his "System of Geography,"[4] with the

[1] "Ultra montes Emodos Seras quoque ab ipsis aspici notos etiam commercio"—PLINY, lib. vi. c. 24.

[2] See the chapter on the Veddahs, Vol. II. Part II. ch. iii.

[3] See WILFORD'S *Sacred Islands of the West*, *Asiat. Res.*, vol. x. p.41.

[4] PTOLEMY, *Geog.* lib. vii. c. 4., tab. xii. Asiæ. In one important particular a recent author has done jus-

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meagre knowledge of the island possessed by all his predecessors. From his position at Alexandria and his opportunities of intercourse with mariners returning from their distant voyages, he enjoyed unusual facilities for ascertaining facts and distances, and in proof of his singular diligence he was enabled to lay down in his map of Ceylon the position of eight promontories upon its coast, the mouths of five principal rivers, four bays, and harbours; and in the interior he had ascertained that there were thirteen provincial divisions, and nineteen towns, besides two emporiums on the coast; five great estuaries which he terms lakes[1],

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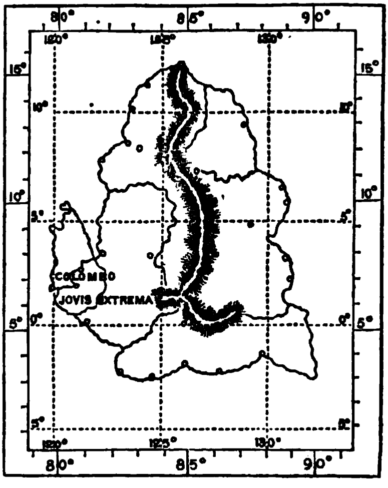
tice to the genius and perseverance of Ptolemy, by demonstrating that although mistaken in adopting some of the fallacious statements of his predecessors, he had availed himself of better data by which to fix the position of Ceylon; so that the western coast in the Ptolemaic map coincides with the modern Ceylon in the vicinity of Colombo. Mr. Cooley, in his learned work on *Claudius Ptolemy and the Nile*, Lond. 1854, has successfully shown that whilst forced to accept those popular statements which he had no authentic data to check, Ptolemy conscientiously availed himself of the best materials at his command, and endeavoured to fix his distances by means of the reports of the Greek seamen who frequented the coasts which he described, constructing his maps by means of their itineraries and the journals of trading voyages. But a fundamental error pervades all his calculations, inasmuch as he assumed that there were but 500 stadia (about fifty geographical miles) instead of sixty miles to a degree of a great circle of the earth; thus curtailing the globe of one-sixth of its circumference. Once apprised of this mistake, and reckoning Ptolemy's longitudes and latitudes from Alexandria, and reducing them to degrees of 600 stadia, his positions may be laid down on a more correct graduation; otherwise "his Taprobane, magnified far beyond its true dimensions, appears to extend two degrees below the equator, and to the seventy-first meridian east of Alexandria (nearly twenty degrees too far east), *whereas the prescribed reduction brings it westward and northward till it covers the modern Ceylon*, the western coasts of both coinciding at the very part near Colombo likely to have been visited by shipping."—Pp. 47. 53. See also Schœll, *Hist. de la Lit. Grecque*, l. v. c. lxx.



[1] It is observable that Ptolemy in his list distinguishes those indentations in the coast which he described

two bays, and two chains of mountains, one of them surrounding Adam's Peak, which he designates as Malœa—the name by which the hills that environ it are known in the *Mahawanso*. He mentions the recent change of the name to Salike (which Lassen conjectures to be a seaman's corruption of the real name Sihala[1]); and he notices, in passing, the fact that the natives wore their hair then as they do at the present day, in such length and profusion as to give them an appearance of effeminacy, "*μαλλοῖς γυναικείοις εἰς ἅπαν ἀναδεδεμένος*."[2]

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as *bays*, *κόλπος*, from the estuaries, to which he gives the epithet of "lakes," *λιμήν*. Of the former he particularises two, the position of which would nearly correspond with the Bay of Trincomalie and the harbour of Colombo. Of the latter he enumerates five, and from their position they seem to represent the peculiar estuaries formed by the conjoint influence of the rivers and the current, and known by the Arabs by the term of "*gobbs*." A description of them will be found at Vol. I. Part I. ch. i. p. 43.

[1] May it not have an Egyptian origin, "Siela-Keh," the *land* of *Siela?*

[2] The description of Taprobane given by Ptolemy proves that the island had been thoroughly circumnavigated and examined by the mariners who were his informants. Not having penetrated the interior to any extent, their reports relative to it are confined to the names of the principal tribes inhabiting the several divisions and provinces, and the position of the metropolis and seat of government. But respecting the coast, their notes were evidently minute and generally accurate, and from them Ptolemy was enabled to enumerate in succession the bays, rivers, and harbours, together with the headlands and cities on the seaborde in consecutive order; beginning at the northern extremity, proceeding southward down the western coast, and returning along the east to Point Pedro. Although the majority of the names which he supplies are no longer susceptible of identification on the modern map, some of them can be traced without difficulty—thus his *Ganges* is still the Mahawelli-ganga; his *Maagrammum* would appear, on a first glance, to be Mahagam, but as he calls it the "metropolis," and places it beside the great river, it is evidently Bintenne, whose ancient name was "Maha-yangana" or "Maha-welli-gam." His *Anurogrammum*, which he calls *βασίλειον*, "the royal residence," is obviously Anarajapoora, the city founded by Anuradha five hundred years before Ptolemy was born (*Mahawanso*, ch. vii. p. 50. x. 65, &c.). It may have borne in his time the secondary rank of a village or a town (*gam* or *gramma*), and afterwards acquired the higher epithet of Anuradha-*poora*, the "city" of Anuradha, after it had grown to the dimensions of a capital. The province of the *Modutti* in Ptolemy's list has a close resemblance in name, though not in position, to Mantotte; the people of Rayagam Corle still occupy the country assigned by him to the *Rhogandani*—his *Naga dibii* are identical with the Nagadiva of the *Mahawanso;* and the islet to which he has given the name of *Bassa*, occupies nearly the position of the Basses, which it has been the custom to believe were so called by the Portuguese—"Baxos" or "Baixos," *sunken rocks*. It is curious

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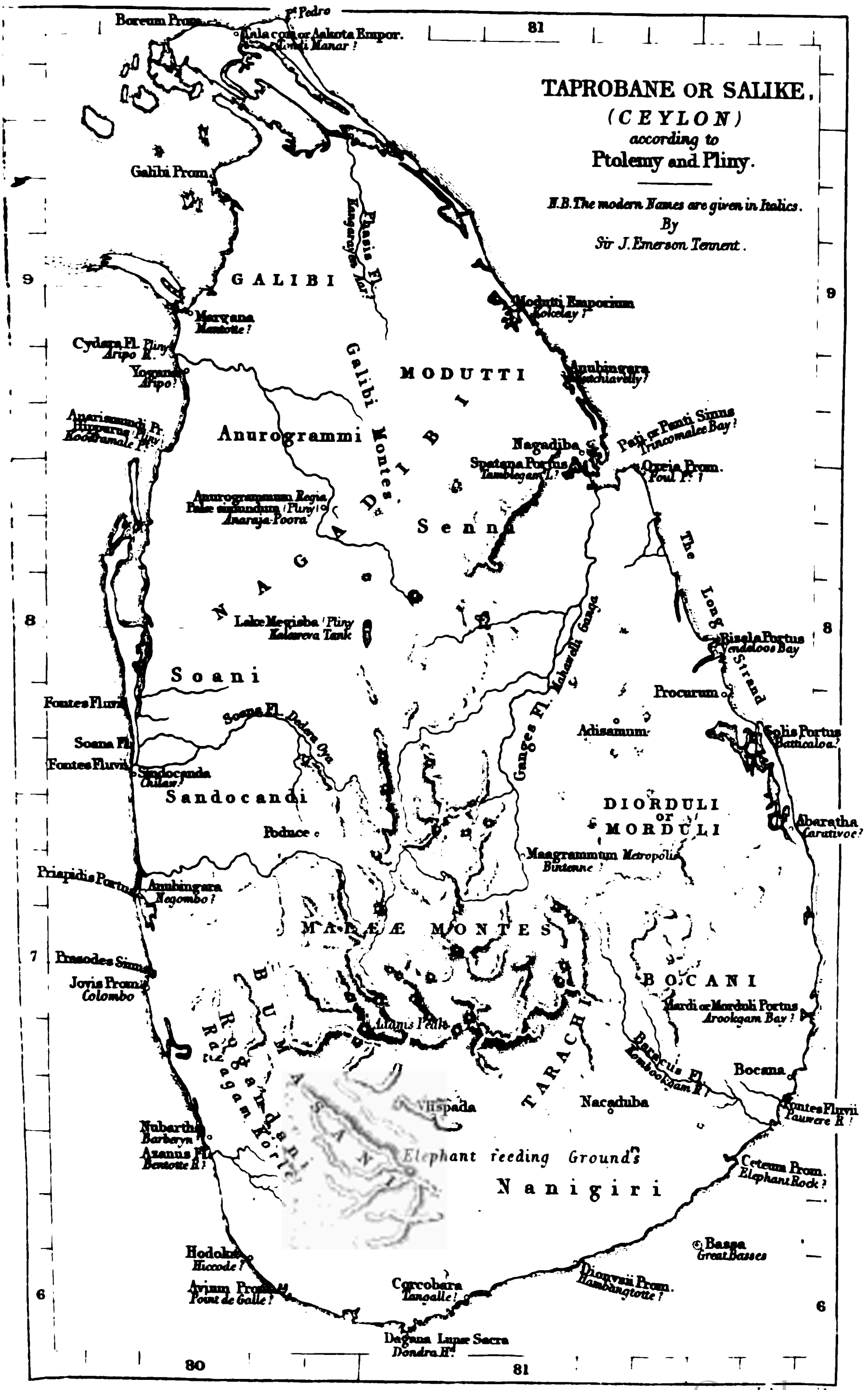

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The extent and accuracy of Ptolemy's information is so surprising, that it has given rise to surmises as to the sources whence it could possibly have been derived.[1] But the conjecture that he was indebted to ancient Phœnician or Tyrian authorities whom he has failed to acknowledge, is sufficiently met by the consideration that these were equally accessible to his predecessors. The abundance of his materials, especially those relating to the sea-borde of India and Ceylon, is sufficient to show that he was mainly indebted for his facts to the adventurous merchants of Egypt and Arabia, and to works which, like the *Periplus of the Erythræan Sea* (erroneously ascribed to ARRIAN the historian, but written by a merchant probably of the same name), were drawn up by practical navigators to serve as sailing directions for seamen resorting to the Indian Ocean.[2]

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that the position in which he has placed the elephant plains or feeding grounds, ἐλεφαντων νομοι, to the south-east of Adam's Peak, is the portion of the island about Matura, where, down to a very recent period, the Portuguese, the Dutch, and the English successively held their annual battues, not only for the supply of the government studs, but for export to India. Making due allowance for the false dimensions of the island assumed by Ptolemy, but taking his account of the relative positions of the headlands, rivers, harbours, and cities, the accompanying map affords a proximate idea of his views of Taprobane and its localities as propounded in his Geography.

Post-scriptum. Since the above was written, and the map it refers to was returned to me from the engraver, I have discovered that a similar attempt to identify the ancient names of Ptolemy with those now attached to the supposed localities, was made by Gosselin; and a chart so constructed will be found (No. xiv.) appended to his *Recherches sur la Géographie des Anciens*, t. iii. p. 303. I have been gratified to find that in the more important points we agree; but in many of the minor ones, the want of personal knowledge of the island involved Gosselin in errors which the map I have prepared will, I hope, serve to rectify.—J.E.T.

[1] HEEREN, *Hist. Researches*, vol. ii. Appendix xii.

[2] LASSEN, *De Taprob. Ins.* p. 4. From the error of Ptolemy in making the coast of Malabar extend from west to east, whilst its true position is laid down in the *Periplus*, VINCENT concludes that he was not acquainted with the *Periplus*, as, anterior to the invention of printing, cotemporaries might readily be ignorant of the productions of each other (VINCENT, vol. ii. p. 55). Vincent assigns the composition of the *Periplus* to the reign of Claudius or Nero, and Dodwell to that of M. Aurelius, but Letronne more judiciously ascribes it to the period of Severus and Caracalla, A. D. 198, 210, fifty years later than Ptolemy. The author, a Greek of Alexandria and a merchant, never visited Ceylon,

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So ample was the description of Ceylon afforded by Ptolemy, that for a very long period his successors, AGATHEMERUS, MARCIANUS of Heraclea, and other geographers, were severally contented to use the facts originally collected by him.[1] And it was not till the reign of Justinian, in the sixth century, that COSMAS INDICO-PLEUSTES, by publishing the narrative of Sopater, added very considerably to the previous knowledge of the island.

As Cosmas is the last Greek writer who treats of Taprobane[2], it may be interesting, before passing to his

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though he had been as far south as Nelkynda (the modern Neliseram), and the account which he gives from report of the island is meagre, and in some respects erroneous. ARRIANI *Periplus Maris Eryth.*; HUDSON, vol. i. p. 35; VINCENT, vol. ii. p. 493.

[1] AGATHEMERUS, *Hudson Geog.*, l. ii. c. 7, 8.; MARCIANUS HERACLEOTA, *Periplus, Hudson*, p. 26. STEPHANUS BYZANTINUS, *in verbo* "Taprobane." Instead of the expression of PTOLEMY that Taprobane *ἐκαλειτο παλαι Σιμουνδου*, which MARCIANUS had rendered Παλαισιμουνδου, STEPHANUS transposes the words as if to guard against error, *παλαι μεν ἐκαλειτο Σιμουνδου*, &c. The prior authority of PTOLEMY, however, serves to prolong the mystery, as he calls the capital Palæsimundum.

[2] There is another curious work which, notwithstanding certain doubts as to its authorship, contains internal evidence entitling it, in point of time, to take precedence of COSMAS. This is the tract *"De Moribus Brachmanorum,"* ascribed to St. Ambrose, and which under the title "Περὶ τῶν τῆς Ἰνδιάς καὶ τῶν Βρακμάνων" has been also attributed to Palladius, but in all probability it was actually the composition of neither. Early in the fifth century Palladius was Bishop of Helenopolis, in Bithynia, and died about A.D. 410. He spent a part of his life in Coptic monasteries, and it is possible that during his sojourn in Egypt, meeting travellers and merchants returning from India, he may have caused this narrative to be taken down from the dictation of one of them. Cave hesitates to believe that it was written by PALLADIUS, "haud facile credem," &c. (*Script. Eccles. Hist. Lit.*); and the learned Benedictine editors of AMBROSE have excluded it from the works of the latter. They could scarcely have done otherwise when the first chapter of the Latin version opens with the declaration that it was drawn up by its author at the request of "PALLADIUS." "Desiderium mentis tuæ Palladi opus efficere nos compellit," &c. Neither of the two versions can be accepted as a translation of the other, but the discrepancies are not inconsistent, and would countenance the conjecture that the book is the production of one and the same person. Much of the material is borrowed from PTOLEMY and PLINY, but the facts which are new could only have been collected by persons who had visited the scenes they describe. The compiler says he had learned from a certain scholar of Thebes that the inhabitants of Ceylon were called *Macrobii*, because, owing to the salubrity of the climate, the average duration of life was 150 years. The petty kings of the country acknowledged one paramount sovereign to whom they were subject as satraps; this the Theban was told by others, as he himself was not allowed to visit the interior. A

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account of the island, to advert to what has been recorded by the Singhalese chroniclers themselves, as to its actual condition at the period when Cosmas described it, and thus to verify his narrative by the test of historical evidence. It has been shown in another chapter that between the first and the sixth centuries, Ceylon had undergone all the miseries of frequent invasions; that in the vicissitudes of time the great dynasty of Wijayo had expired, and the throne had fallen into the hands of an effeminate and powerless race, utterly unable to contend with the energetic Malabars, who acquired an established foot-

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thousand other islands lie adjacent to Ceylon, and in a group of these which he calls Maniolæ (probably the Attols of the Maldives,) is found the loadstone, which attracts iron, so that a vessel coming within its influence, is seized and forcibly detained, and for this reason the ships which navigate these seas are fastened with pegs of wood instead of bolts of iron.

Ceylon, according to this traveller, has five large and navigable rivers, it rejoices in one perennial harvest, and the flowers and the ripe fruit hang together on the same branch. There are palm trees; both those that bear the great Indian nut, and the smaller aromatic one (the areka). The natives subsist on milk, rice, and fruit. The sheep produce no wool, but have long and silky hair, and linen being unknown, the inhabitants clothe themselves in skins, which are far from inelegantly worked.

Finding some Indian merchants there who had come in a small vessel to trade, the Theban attempted to go into the interior, and succeeded in getting sight of a tribe whom he calls Besadæ or Vesadæ, his description of whom is in singular conformity with the actual condition of the Veddahs in Ceylon at the present day. "They are," he says, "a feeble and diminutive race, dwelling in caves under the rocks, and early accustomed to ascend precipices, with which their country abounds, in order to gather pepper from the climbing plants. They are of low stature, with large heads and shaggy, uncut hair."

The Theban proceeds to relate that being arrested by one of the chiefs, on the charge of having entered his territory without permission, he was forcibly detained there for six years, subsisting on a measure of food, issued to him daily by the royal authority. This again presents a curious coincidence with the detention and treatment of Knox and other captives by the kings of Kandy in modern times. He was at last released owing to the breaking out of hostilities between the chief who held him prisoner and another prince, who accused the former before the supreme sovereign of having unlawfully detained a Roman citizen, after which he was set at liberty, out of respect to the Roman name and authority.

This curious tract was first published by CAMERARIUS, but in 1665 Sir EDWARD BISSE, Baronet, and Clarenceux King-at-Arms, reproduced the Greek original, supposing it to be an unpublished manuscript, with a Latin translation. It is incorporated in one of the MSS. of the *Pseudo-Callisthenes* recently edited by MÜLLER, lib. iii. ch. vii. viii.; DIDOT, *Script. Græc. Bib.*, vol. xxvi. Paris, 1846.

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ing in the northern parts of the island. The south, too wild and uncultivated to attract these restless plunderers, and too rugged and inaccessible to be overrun by them, was divided into a number of petty principalities, whose kings did homage to the paramount sovereign north of the Mahawelli-ganga. Buddhism was the national religion, but toleration was shown to all others, — to the worship of the Brahmans as well as to the barbarous superstition of the aboriginal tribes. At the same time, the productive wealth of the island had been developed to an extraordinary extent by the care of successive kings, and by innumerable works for irrigation and agriculture provided by their policy. Anarajapoora, the capital, had expanded into extraordinary dimensions, it was adorned with buildings and monuments, surpassing in magnitude those of any city in India, and had already attracted pilgrims and travellers from China and the uttermost countries of the East.

With the increasing commercial intercourse between the West and the East, Ceylon, from its central position, half way between Arabia and China, had during the same period risen into signal importance as a great emporium for foreign trade. The transfer of the seat of empire from Rome to Constantinople served to revive the over-land traffic with India; and the Persians for the first time[1] vied with the Arabs and the merchants of Egypt, and sought to divert the Oriental trade from the Red Sea and Alexandria to the Euphrates and the Tigris.

Already, between the first and fifth centuries, the course of that trade had undergone a considerable change. In its infancy, and so long as the navigation was confined to coasting adventures, the fleets of the Ptolemies sailed no further than to the ports of Arabia

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[1] GIBBON, ch. xl.; ROBERTSON'S *India*, b. i.

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Felix[1], where they were met by Arabian vessels returning from the west coast of India, bringing thence the productions of China, shipped at the emporiums of Malabar. After the discovery of the monsoons, and the accomplishment of bolder voyages, the great entrepôt of commerce was removed further south; first, from Muziris, the modern Mangalore, to Nelkynda, now Neliseram, and afterwards to Calicut and Coulam, or Quilon. In like manner the Chinese, who, whilst the navigation of the Arabs and Persians was in its infancy, had extended their voyages not only to Malabar but to the Persian Gulf, gradually contracted them as their correspondents ventured further south. HAMZA says, that in the fifth century the Euphrates was navigable as high as Hira, within a few miles of Babylon[2]; and MASSOUDI, in his *Meadows of Gold*, states that at that time the Chinese ships ascended the river and anchored in front of the houses there.[3] At a later period, their utmost limit was Syraf, in Farsistan[4]; they afterwards halted first at Muziris, next at Calicut[5], then at Coulam now Quilon[6]; and eventually, in the fourth and fifth centuries, the Chinese vessels appear rarely to have sailed further west than Ceylon. Thither they came with their silks and other commodities, those destined for Europe being chiefly paid for in silver[7], and those intended for barter in India were trans-shipped into smaller craft, adapted to the Indian seas, by which they were distributed at the various ports east and west of Cape Comorin.[8]

COSMAS was a merchant of Egypt in the reign of Jus-

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[1] Aden was a Roman emporium, 'Ρωμαϊκὸν ἐμποριον 'Αδάνην.—PHILOSTORGIUS, p. 28.

[2] HAMZA ISPAHANENSIS, p. 102; REINAUD, *Relation*, &c., vol. i. p. 35.

[3] MASSOUDI, *Meadows of Gold*, Transl. of SPRENGER, vol. i. p. 246.

[4] ABOU-ZEYD, vol. i. p. 14; REINAUD, *Discours*, pp. 44, 78.

[5] DULAURIER, *Journ. Asiat.*, vol. xlix. p. 141; VINCENT, vol. ii. pp. 464, 507.

[6] ABOU-ZEYD, p. 15; REINAUD, *Mém. sur l'Inde*, p. 201.

[7] PLINY, lib. vi. ch. xxvi.; *Periplus Mar. Erythr.*

[8] ROBERTSON, *Au Ind.*, sec. ii. The Periplus of the Erythrean Sea describes these Ceylon crafts as rigged vessels, *ἱστιοπεποιημένοις νηυσί*.

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ing in the northern parts of the island. The too wild and uncultivated to attract these plunderers, and too rugged and inaccessible to be run by them, was divided into a number of pet cipalities, whose kings did homage to the par sovereign north of the Mahawelli-ganga. Bu was the national religion, but toleration was sh all others, — to the worship of the Brahmans as well the barbarous superstition of the aboriginal tribes. the same time, the productive wealth of the island been developed to an extraordinary extent by the of successive kings, and by innumerable works f rigation and agriculture provided by their p Anarajapoora, the capital, had expanded into ex ordinary dimensions, it was adorned with buil and monuments, surpassing in magnitude those of a city in India, and had already attracted pilgrims a travellers from China and the uttermost countri the East.

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Cosmas ... a merchant ...

[1] Aden ...
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Torgius, p. ...

tinian, who, from the extent of his travels, acquired the title of "Indico-pleustes." Retiring to the cloister, he devoted the remnant of his life to the preparation of a work in defence of the cosmography of the Pentateuch from the errors of the Ptolemaic astronomy.[1] He died in the year 550, before his task was completed, and one of the last portions on which he was employed was an account of Taprobane, taken down from the reports of Sopater, a Greek trader whom he had met at Adule in Ethiopia, when on his return from Ceylon.

Sopater, in the course of business as a merchant, sailed from Adule in the same ship with a Persian bound for Ceylon, and on his arrival he and his fellow-traveller were presented by the officers of the port to the king, who was probably Kumara Das, the friend and patron of the poet Kalidas.[2] The king received them with courtesy, and Cosmas recounts how in the course of the interview Sopater succeeded in convincing the Singhalese monarch of the greater power of Rome as compared with that of Persia, by exhibiting the large and highly finished gold coin of the Roman Emperor in contrast with the small and inelegant silver money of the Shah. This story would, however, appear to be traditional, as Pliny relates a somewhat similar anecdote of the ambassadors from Ceylon in the reign of Claudius, and of the profound respect excited in their minds by the sight of the Roman denarii.

As Sopater was the first traveller who described

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[1] Χριστιανικὴ Τοπογραφία, sive *Christianorum Opinio de Mundo*. This curious book has been printed entire by Montfaucon from a MS. in the Vatican Coll. Patr. vol. ii. p. 333. Paris, 1706 A.D. There is only one other MS. known, which was in Florence; and from it THEVENOT had previously extracted and published the portion relating to India in his *Relation des Div. Voy.*, vol. i. Paris, 1576 A.D.

[2] Cosmas wrote between A.D. 545 and 550; and the voyage of Sopater to Ceylon had been made thirty years before. Kumaara Das reigned from A.D. 515 to A.D. 524. Vincent has noted the fact that in his interview with the Greek he addressed him by the epithet of Roomi, "*συ* 'Ρωμεν," which is the term that has been applied from time immemorial in India to the powers who have been successively in possession of Constantinople, whether Roman, Christian, or Mahommedan.—Vol. ii. p. 511, &c.

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Ceylon from personal knowledge, I shall give his account of the island in the words of Cosmas, which have not before been presented in an English translation. "It is," he says, "a great island of the ocean lying in the Indian Sea, called Sielendib by the Indians, but Taprobane by the Greeks. The stone, the hyacinth, is found in it; it lies beyond the pepper country.[1] Around it there are a multitude of exceedingly small islets[2], all containing fresh water and coco-nut palms[3]; these (islands) lie as close as possible together. The great island itself, according to the accounts of its inhabitants, is 300 *gaudia*[4], or 900 miles long, and as many in breadth. There are two kings ruling at opposite ends of the island[5], one of whom possesses the hyacinth[6], and the other the district, in which are the port

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[1] Malabar or Narghyl Arabia.

[2] The Maldive Islands.

[3] Ἀργέλλια pro ναργέλλια, from *narikela*, the Sanskrit, and *narghyl*, Arab, for the "coco-nut palm."—GILDEMESTER, *Script. Arab.* p. 36.

[4] "Γαυδια." It is very remarkable that this singular word *gaou*, in which Cosmas gives the dimensions of the island, is in use to the present day in Ceylon, and means the distance which a man can walk in an hour. VINCENT, in his *Commerce and Navigation of the Ancients*, has noticed this passage (vol. ii. p. 506), and says, somewhat loosely, that the Singhalese *gaou*, which he spells "*ghadia*," is the same as the *naligiae* of the Tamils, and equal to three-eighths of a French league, or nearly one mile and a quarter English. This is incorrect; a *gaou* in Ceylon expresses a somewhat indeterminate length, according to the nature of the ground to be traversed, a gaou across a mountainous country being less than one measured on level ground, and a gaou for a loaded cooley is also permitted to be shorter than for one unburthened, but on the whole the average may be taken *under four miles*. This is worth remarking, because it brings the statement made to Sopater by the Singhalese in the sixth century into consistency with the representations of the ambassadors to the Emperor Claudius in the first, although both prove to be erroneous. It is curious that FA HIAN, the Chinese traveller, whose zeal for Buddhism led him to visit India and Ceylon a century and a half before Cosmas, gives an area to the island which approaches very nearly to correctness; although he reverses the direction in which its length exceeds its breadth. *Foë-kouë-ki*, c. xxxvii. p. 328.

[5] "Ἐνάντιοι ἀλλήλων. This may also mean "at war with one another."

[6] This has been translated so as to mean the portion of the island producing hyacinth stones ("la partie de l'isle où se trouvent les jacinthes." THEVENOT). But besides that I know of no Greek form of expression that admits of such expansion; this construction, if accepted, would be inconsistent with fact; — for the king alluded to held the north of the island, whereas the region producing gems is the south, and in it were also the "emporium," and the harbour frequented by shipping and merchants. I am disposed therefore to accept the term in its simple sense, and to believe that it refers to one

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and emporium[1], for the emporium in that place is the greatest in those parts.

"The island has also a community of Christians[2], chiefly resident Persians, with a presbyter ordained in Persia, a deacon, and a complete ecclesiastical ritual.[3]

"The natives and their kings are of different races.[4] The temples are numerous, and in one in particular, situated on an eminence[5], is the great hyacinth, as large as a pine-cone, the colour of fire, and flashing from a distance, especially when catching the beams of the sun—a matchless sight.

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particular jewel, for the possession of which the king of Ceylon enjoyed an enviable renown. Cosmas, in the succeeding sentence, describes this wonderful gem as being deposited in a temple near the capital, and Hiouen Thsang, the Chinese pilgrim, says that in the seventh century, a ruby was elevated on a spire surmounting a temple at Anarajapoora "dont l'éclat magnifique illumine tout le ciel."—*Vie de Hiouen Thsang*, lib. iv. p. 199; *Voyages des Pélerins Bouddhistes*, lib. xi. v. ii. p. 141. MARCO POLO, in the thirteenth century, says the "king of Ceylon is reputed to have the grandest ruby that was ever seen, a span in length, the thickness of a man's arm; brilliant beyond description, and without a single flaw. It has the appearance of a glowing fire, and its worth cannot be estimated in money. The Grand Khan Kublai sent ambassadors to this monarch to offer for it the value of a city, but he would not part with it for all the treasures of the world, as it was a jewel *handed down by his ancestors on the throne*." — *Trans.* MARSDEN, 4to. 1818. It is most probable that the stone described by Marco Polo was not a ruby, but an amethyst, which is found in large crystals in Ceylon, and which modern mineralogists believe to be the "hyacinth" of the ancients. (DANA'S *Mineralogy*, vol. ii. p. 196.) CORSALI says it was a carbuncle (Ramusio, vol. i. p. 180); and JORDAN DE SEVERAC, about the year 1323, repeats the story of its being a ruby so large that it could not be grasped in the closed hand. —*Receuil de Voy.*, Soc. Geog. Paris. Vol. iv. p. 50.)

Of the ultimate history of this renowned jewel we have no authentic narrative; but it is stated in the Chinese accounts of Ceylon that early in the fourteenth century an officer was sent by the emperor to purchase a "carbuncle" of unusual lustre. "This served as the ball on the emperor's cap, and was transmitted to succeeding emperors on their accession as a precious heirloom, and worn on the birthday and at the grand courts held on the first day of the year. It was upwards of an ounce in weight, and cost 100,000 strings of cash. Every time a grand levee was held during the darkness of the night, the red lustre filled the palace, and it was for this reason designated 'The Red Palace-Illuminator.'" — *Tsih-ke,* or *Miscellaneous Record,* quoted in the *Kih che-king-yuen, Mirror of Science,* b. xxxiii. p. 1, 2.

1 The port and harbour of Point de Galle.

2 Nestorians, whose "Catholicos" resided first at Ctesiphon, and afterwards at Mosul. —VINCENT, *Periplus, &c.*, vol. ii. p. 507. For an examination of the hypotheses based on this statement of Cosmas, see Sir J. EMERSON TENNENT'S *History of Christianity in Ceylon*, ch. i.

3 "Λειτουργίαν," literally *liturgy;* which meant originally the pomp and ceremonial of worship as well as the form of prayer.

4 'Αλλόφυλλοι.

5 Probably that at Mihintala, the sacred hill near Anarajapoora.

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"As its position is central, the island is the resort of ships from all parts of India, Persia, and Ethiopia, and, in like manner, many are despatched from it. From the inner[1] countries; I mean China, and other emporiums, it receives silk[2], aloes, cloves, clove-wood, *chandana*[3], and whatever else they produce. These it again transmits to the outer ports[4],—I mean to Male[5], whence the pepper comes; to Calliana[6], where there is brass and sesamine-wood, and materials for dress (for it is also a place of great trade), and to Sindon[7], where they get musk, castor, and *androstachum*[8], to Persia, the Homeritic coasts[9], and Adule. Receiving in return the exports of those emporiums, Taprobane exchanges them in the inner ports (to the east of Cape Comorin) sending her own produce along with them to each.

"*Sielediba*, or Taprobane, lies seaward about five days' sail from the mainland.[10] Then further on the continent is Marallo, which furnishes *cochlea*[11]; then comes Kaber, which exports '*alabandanum*;'[12] and next is the clove country, then China, which exports silk; beyond which there is no other land, for the ocean encircles it on the east. *Sielediba* being thus placed in the middle as it were of India, and pos-

[1] "*τῶν ἐνδοτέρων*," the countries inside (that is to the east) of Cape Comorin, as distinguished from the outer ports (*τὰ ἐξώτερα*) mentioned below, which lie west of it.

[2] "*μετάξιν*." Of this foreign word, applied by the mediæval Greeks to silk in general, as well as to raw silk, PROCOPIUS says:—"*Αὕτη δέ ἐστιν ἡ μέταξα, ἐξ ἧς εἰώθασι τὴν ἐσθῆτα ἐργάζεσθαι, ἣν πάλαι μὲν Ἕλληνες μηδικὴν, τανῦν δὲ σηρικὴν ὀνομάζουσι.*"—PROCOP. *Persic.* I. *Metaxa*, or anciently *mataxa*, "thread," "yarn," seems to be Latin rather than Greek. The *metaxarius* was a "yarn-broker;" and the word having got possession of the market, was extended to the woven stuff. The modern Greeks call silk *μέταξα*.

[3] "*τζάνδανα*," probably "sandalwood;" sometimes called *agallochum*.

[4] "*τὰ ἐξώτερα*," those lying west of Cape Comorin.

[5] Malabar.

[6] Bombay.

[7] Scinde.

[8] "*ἀνδροστάχον*."

[9] Southern Arabia, chiefly Hadramaut.

[10] Cosmas probably means "the more distant *ports* on" the mainland of India.

[11] "*κοχλίους*," probably chank-shells, *turbinella rapa*. See ABOU-ZEYD, vol. i. p. 6.

[12] "*ἀλαβανδανόν*."

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sessing the hyacinth, receives goods from all nations, and again distributes them, thus becoming a great emporium."

This description of the Indian trade by Cosmas is singularly corroborative of the account that had previously been given by the author of the *Periplus*; and as the Singhalese have at all times been remarkable for their aversion to the sea, the country-craft[1], thus mentioned by both authorities as engaged in voyages between Ceylon and the countries east and west of Cape Comorin, must have been manned in part by Malabars, but chiefly by the Arabs and Persians, who, previous to the time of Cosmas, had been induced to settle in large numbers in Ceylon[2], attracted by the activity of its commerce, and the extensive employment for shipping afforded by its transit trade.

Amongst the objects, the introduction of which was eagerly encourged in Ceylon, Cosmas particularises horses from Persia; the traders in which were exempted from the payment of customs. The most remarkable exports were elephants, which from their size and sagacity were found to be superior to those of India for purposes of war. Hence the renown accorded to Ceylon, as pre-eminently the birthplace of the Asiatic race of elephants.

"Μητέρα Ταπροβάνην Ἀσιηγενέων ἐλεφάντων."
DIONYSIUS PERIEGETES, v. 593.

Cosmas observes upon the smallness of their tusks compared with those of Africa, and mentions the strange fact, that ivory was then exported from Æthiopia to India, as well as to Persia and the countries of Europe. He makes other allusions to Ceylon, but the passages extracted above, present the bulk of his information concerning the island.[3]

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1 "τοπικὰ πλοῖα."—*Periplus.*

2 REINAUD, *Mém. sur l'Inde*, p. 124. and *Introd.* ABOULFEDA.

3 The above translation has been made from THEVENOT'S version of Cosmas, which may differ slightly from that of MONTFAUCON, *Collect. Nov. Patrum.* Paris, 1706, vol. ii. p.

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NOTE (A).

Knowledge of Ceylon possessed by the Phœnicians.

IN the previous chapter, p. 526, &c., allusion has been made to the possible resort of the Phœnicians to Ceylon in the course of their voyages to India, but I have not thought it expedient to embody in the text any notice of the description of the island which is given in the Phœnician History of SANCHONIATHON, published by Wagenfeld, at Bremen, in 1837, under the title of "*Sanchuniathonis Historiarum Phœniciæ Libri Novem Græce Versos a Philone Byblio,* edidit Latinaque Versione donavit F. WAGENFELD."

Sanchoniathon is alleged to have lived before the Trojan war; and in Asiatic chronology he is said to have been a contemporary of Semiramis. The Phœnician original perished; but its contents were preserved in the Greek translation of Philo, a native of Byblus, a frontier town of Phœnicia, who wrote in the first century after Christ, and till the alleged discovery of the MS. from which Wagenfeld professed to publish, the only portion of Philo's version known to exist consisted of fragments preserved by Eusebius and Porphyry. Wagenfeld's statement was, that the MS. in his possession had been obtained from the Portuguese monastery of St. Maria de Merinhao (the existence of which there is reason to doubt), and the portion which he first ventured to print appeared with a preface by Grotefend. Its genuineness was instantly impugned; a learned and protracted controversy arose; and though Wagenfeld eventually pub-

336. In point of time, the notice of Ceylon given by the Armenian Archbishop Moses of Chorene in his *Historia Armeniaca et Epitome Geographiæ,* is entitled to precede that of Cosmas Indico-pleustes, inasmuch as Moses has translated into Armenian the Greek text of Pappus of Alexandria, who wrote about the end of the fourth century. Of Taprobane he says—it is one of the largest islands in the world, being 1100 miles in length by 1500 broad, and reckons 1370 adjacent islands amongst its dependencies. He alludes to its mountains and rivers, the variety of races which inhabit it, and its production of gold, silver, gems, spices, elephants, and tigers; and dwells on the fact, previously noticed by Agathemerus, that the men of this country dress their hair after the fashion of women, by braiding it in tresses on the top of their heads, "viri regionis istius capillis muliebribus sua capita redimiunt."—MOSES CHORENENSIS, &c., edit. Whiston, 1736, p. 367. The most remarkable circumstance is that he alludes thus early to the footprint on Adam's Peak, which is probably the meaning of his expression, "*ibidem Satanæ lapsum narrant,*" t. iv.

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lished the whole of the Greek MS., with a Latin version by himself, he was never prevailed upon to exhibit the original parchments, alleging that he had been compelled to restore them to the convent. The assailants of Wagenfeld accuse him of wilful deception; but the probability is that the document which he translated is one of those inventions of the Middle Ages, in which history and geography were strangely confounded with imagination and romance; and that it is an attempt to restore the lost books of Philo Byblius, as Philo himself is more than suspected to have invented the history which he professed to have translated from Sanchoniathon. (See ERSCH *and* GRÜBER'S *Encyclopædia,* 1847; MÖVER'S *Phœnician History,* vol. i. p. 117.)

In books vii. and viii., Sanchoniathon gives an account of an island in the Indian seas explored by Tyrian navigators, the description of which is evidently copied from the early Greek writers who had visited Taprobane, and the name which is assigned to it, "*the Island of Rachius,*" is borrowed from Pliny. The period of their visit is fixed by Sanchoniathon shortly after the conquest of Cittium, in Cyprus, by the Phœnicians; an event which occurred when Hiram reigned at Tyre, and Solomon at Jerusalem. The narrative is given as follows (book vii. ch. v. p. 150): "So Bartophas died the next day, having exercised imperial authority for six years." (Ch. v.) "And on his death they chose Joramus, the son of Bartophas, king, whom the Tyrians styled Hierbas, and who reigned fifty-seven years. He having collected seventy-nine long ships, sent an expedition against Cittium." . . . (Ch. vi.) "At this time, Obdalius, king of the island of Mylite, sent all his forces to assist the Tyrians at Cittium; and when it came to the knowledge of the barbarians who inhabited Tenga, that the island was denuded of men and ships, they invaded it under the command of Plusiacon, the son-in-law of Obdalius, and having slain him and many of his people, they plundered the country, and gave the city to the flames." (Ch. vii.) "And Joramus directed all the eparchs in the cities and islands to make out and send to Tyre descriptions of the inhabitants, their ships, their arms, their horses, their scythe-bearing chariots, and their property of all kinds; and he ordered them to send to distant countries persons competent to draw up narratives of the same kind, and to record them all in a book. In this manner he obtained accurate geographical descriptions of

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all the regions to the east and the west, both islands and inland parts. But the Æthiopians[1] represented to the king that to the south there were great and renowned countries, densely populated, and rich in precious things, *gold* and *silver*, pearls, gems, ebony, pepper, elephants, *monkeys*, parrots, *peacocks*, and innumerable other things; and that there was a peninsula so far to the east that the inhabitants could see the sun rising out of the sea." (Ch. viii.) "Joramus then sent messengers to Natambalus, the king of the Babylonians, who were to say to him, 'I have heard that the countries of the Æthiopians are numerous, and abounding in inhabitants; they are easy of access from Babylon, but very difficult from Tyre. If, therefore, I should determine to explore them, and you will let my subjects have suitable ships, you shall have in return a hundred purple cloaks.' Natambalus was willing to do so; but the Æthiopian merchants, who resorted to Babylon, vowed that they would take their departure if he should assist Joramus to sail to Æthiopia." (Chap. ix.) "Subsequently Joramus addressed himself to Irenius of Judea, and undertook that if he would let the Tyrians have a harbour on the sea towards Æthiopia, he would assist him in the building of a palace, in which he was then engaged; and bind himself to supply him with materials of cedar and fir, and squared stones. Irenius assenting, made over to Joramus the city and harbour of Ilotha. There were a great many date trees there, but as their timber was not suitable for constructing vessels, Joramus despatched eight thousand camels to Ilotha, loaded with materials for ship-building, and ordered the shipwrights to build ten ships, and he appointed Cedarus and Jaminus and Cotilus, commanders. . . . They sailed from Ilotha; but furious tempests prevented them from passing the straits.[2] And while they were wind-bound, they remained five months in a certain island, and having sowed wheat on the low ground, they reaped an abundant crop. After this they sailed towards the rising sun, and leaving the land of the Arabians they fell in with Babylonian ships returning from Æthiopia.[3] And on the following day they arrived at the country of the Æthiopians, which they perceived sandy and devoid of water on the coast, but mountainous inland. They then sailed eastward along the shore for ten days.

[1] The Æthiopians alluded to were a company of Indian jugglers and snake-charmers, whose arrival from Babylon is mentioned lib. vii. ch. i.

[2] Of Bab-el-mandeb.

[3] India.

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There an immense region extends to the south, and the Æthiopians dwell in numerous populous and well-circumstanced cities, and navigate the sea. Their ships are not suited for war, and have no sails. And having sailed thirty-six days to the southward, the Tyrians arrived at the island of Rachius (Ῥαχίου νῆσον)."

(Ch. 9.) "The roadstead was in front of a level strand, bordered with lofty trees, and coming on to blow at night, they were in the utmost danger till sunrise: but running then to the south, they came in sight of a safe harbour[1]; and saw many populous towns inland. On landing, they were surrounded by the villagers, and the governor of the place entertained them hospitably for seven days; pending the return of a messenger whom he had despatched to the principal king, to ask his instructions relative to the Tyrians who had anchored in the harbour. The messenger having returned on the seventh day, the governor sent for the Tyrians the following morning, and informed them that they must go with him to the king, who was then residing at Rochapatta, a large and prosperous city in the centre of the island. In front marched several spearmen, sent by the king as a guard of honour to the strangers; who with the clash of their spears scared away the elephants which were numerous and dangerous because it was their rutting time. The Tyrians marched in the centre, and Cedarus, Cotilus, and Jaminus were carried in palanquins. The villagers as they passed along offered them presents, and the governor brought up the rear, where he rode on an elephant, surrounded by his body guard. In this order of march, they on the third day came to a ford; in the passage over which, one of the travellers was devoured by crocodiles which swarm in the rivers. Having proceeded thus for several days, they at length descried the city of Rochapatta, environed by lofty mountains. And when it was known that they had arrived (for the rumour of their approach had preceded them) the inhabitants rushed from the city in a body to see the Tyrians; some riding on elephants, some on asses, some in palanquins, but the greater part on foot. And the commander having conducted them into a spacious and splendid palace, caused the gates to be closed, that the crowd might not make their way in; and led the Tyrians to the King Rachius, who was seated on a beautiful couch. Presents were then inter-

[1] Galle?

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changed. To the Tyrians, who brought horses and purple robes, and seats of cedar, the King gave in return, pearls, gold, 2000 elephants' teeth, and much unequalled cinnamon (*κιννάμῳ πολλῷ τε καὶ διαφέροντι*); and he entertained them as guests for thirty days." (Ch. xi.) "Some of the Tyrians perished in the island, one indeed by sickness, but the others smitten by the gods. One man, picking up some pellets of sheep's dung, drew lines on the sand, and challenged another who happened to be looking on, to play a game with them. The challenger held the sheep's dung, but the other, who could not find any dung of camels (for there are no camels in that island), took cow-dung, of which there was a great quantity, and rolling up little balls of it, placed them on the lines. But a priest who was present warned them to desist, because cow-dung is sacred among them, but they only laughed. So the priest passed on, and they continued their game, but shortly after, both fell down and expired, to the consternation of the bystanders. One of those who died was a native of Jerusalem." (Ch. xii.) "The sea encircles this great island of Rachius on every side, except that to the north and west there is *an isthmus which affords a passage to the opposite coast.* Baaut constructed this place by heaping up mud, and her footprint is still to be seen in the mountain (*ἧς καὶ ἴχνος ἐστὶν ἐν τοῖς ὄροις*).

"And the great king traced his descent from her race. The island is six days' journey in breadth, and twelve days' journey in length. It is populous and delightful. Its natural productions are magnificent, and the sea furnishes fish of the finest flavour, and in the greatest abundance, to the inhabitants of the coast. Wild beasts are numerous in the mountains, of which elephants are the largest of all. There is also the most fragrant of cassia (*κασία δὲ ἡ ἀρωματικωτάτη*).

"They find stones containing gold in the rivers, and pearls on the sea-shore. Four kings govern the island, all subordinate to the paramount sovereign, to whom they pay as tribute, cassia, ivory, gems, and pearls; for the king has gold in the greatest abundance. The first of these kings reigns in the south, where there are herds of elephants, of which great numbers are captured of surprising size. In this region the shore is inhospitable, and destitute of inhabitants, but the city, in which the governor resides, lies inland, and is said to be large and flourishing. The second king governs the western regions which produce cinnamon (*τῶν πρὸς ἑσπέραν τετραμμένων τῶν κινναμωμοφόρων*); and it was there the Tyrian ships cast

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anchor. The third rules the region towards the north, which produces pearls. He has made a great rampart on the isthmus to control the passage of the barbarians from the opposite coast; for they used to make incursions in great numbers, and destroyed all the houses, temples, and plantations they could reach, and slew such men as were near, or could not flee to the mountains. The fourth king governs the region to the east, producing the richest gems in surprising profusion; the ruby, the sapphire, and diamond. All these, being the brothers of the great king in Rochapatta, are appointed to rule over these places, and he who is the eldest of the brothers has the supreme power, and is called the chief and mighty ruler. He has a thousand black elephants, and five light-coloured ones. The black are abundant, but the fair-coloured are rare, and found nowhere except in this island, and the black ones do homage to them. Having captured such a one, they bring him to the king in Rochapatta, whose peculiar prerogative it is to ride on a white elephant, this being unlawful for his subjects. There are many fierce crocodiles in the rivers, and they are killed by crowds of men who rush with shouts into the water, armed with sharp stakes. And ten days after they arrived in Rochapatta, many Tyrians joined Rachius in hunting crocodiles." (Ch. xii.) "When the ships returned to Tyre, Joramus gave orders to erect a pillar at the temple of Melicarthus, and to engrave on it an account of all that had taken place. This pillar was thrown down in the earthquake of last year, but it was not broken, so that the narrative can even now be seen."

BOOK VIII.

(Ch. i.) "This is the voyage which Joramus, the king of the Tyrians ordered Joramus, the priest of Melicarthus, to recount and to engrave on a pillar in the temple of Melicarthus, and Sydyk, the scribe, having four copies, was directed to send them to the Sidonians, the Byblians, the Aradians, and he Berythians. The other copies can nowhere be found, and the pillar lies shattered in the ruins of the temple, but the copy of the Byblians is still left in the Temple of Baaltis, and its words are to this effect."

(Ch. ii.) "Hierbas, the son of Bartophas, and king of the Tyrians, thus addressed Joramus, the priest of Madynus, at the time when figs were first ripe: 'Taking a book and pen, describe all the cities and islands and colonies and the countries

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of the barbarians, and the forces of them all, and their ships of war and of burthen, and their scythe-armed chariots. For when our ships of war, sailing to the island of Rachius, reached the remotest parts eastward that we knew, the extremities of all lands, and the nations that inhabited them, we discovered things unknown to our ancestors. For our ancestors, sailing only to the islands and the region extending to the west, knew nothing of the countries which we have explored to the east: you will therefore write all these things for the information of posterity.' When having prostrated myself before the king, on his saying these things, and having returned to my own house I wrote as follows:—

. . . .

(Ch. xvi.) . . . . "To the eastward dwell the Babylonians and Medians and Æthiopians. The city of the Babylonians is flourishing and populous; Media produces white horses; Æthiopia is barren and arid near the sea, and mountainous in the interior. And further to the east is the peninsula of Rachius, whither the ships of Hierbas sailed."

On this narrative of Sanchoniathon it is only necessary to remark that the allusion in ch. ix. to the assistance rendered by the Tyrians to Irenius of Judea, when building his palace, in supplying him with timber and squared stones, is almost literally copied from the passage in the Old Testament (1 Kings, ix. 11), where Hiram is stated to have furnished to Solomon "cedar trees and fir trees," for the building of the Temple.

The cession by Irenius of the city and harbour of Ilotha refers to the resort of the Tyrians to Ezion Geber, or *Eloth*, in the Ælanitic Gulf of the Red Sea, Ib. v. 26, whence they piloted the ships of Solomon, which once in every three years returned with cargoes of gold from Ophir. (Ib. v. 28.)

As to the incidents and observations recorded by the Phœnician travellers during their journey to the interior of Ceylon,—the kings by which it was governed, the natural productions of the various regions, the footprint on Adam's Peak, the incursions of the Malabars, the ascendency of their religion, the absence of camels, the abundance of elephants, and the cultivation of cinnamon,—all these are so palpably imitated from the accounts of Cosmas Indico-pleustes, and the voyages of Arabian mariners, that it is almost unnecessary to point to the parallel passages from which they are taken.

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CHAP. II.

INDIAN, ARABIAN, AND PERSIAN AUTHORITIES.

ON closing the volume of Cosmas, we part with the last of the Greek writers whose pages guide us through the mist that obscures the early history of Ceylon. The religion of the Hindus is based on a system of physical error, so incompatible with the extension of scientific truth, that in their language the term "geography" is unknown.[1] But still it is remarkable as an illustration of the uninquiring character of the people, that the allusions of Indian authors to Ceylon, an island of such magnitude, and so close to their own country, are pre-eminent for absurdity and ignorance. Their "Lanka" and its inhabitants are but the distortion of a reality into a myth. ALBYROUNI, the Arabian geographer, writing in the eleventh century, says that the Hindus at that day thought the island haunted; their ships sailing past it, kept at a distance from its shores; and even within the present century, it was the popular belief on the continent of India that the interior of Ceylon was peopled by demons and monkeys.[2]

But the century in which Cosmas wrote witnessed the rise of a power whose ascendant energy diffused

[1] The Arabians began the study so late, that they, too, had to borrow a word from the Greeks, whence their term "*djagrafiya.*"

[2] MOOR's *Hindu Pantheon*, p. 318. MOOR speaks of an educated Indian gentleman who was attached as Munshi to the staff of Mr. North, Governor of Ceylon, in 1804, and who, on his return to the continent, wrote a history of the island, in which he repeats the belief current among his countrymen, that "the interior was not inhabited by human beings of the ordinary shapes."—P. 329.

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a new character over the policy and literature of the East. Scarcely twenty years elapsed between his death and the birth of Mahomet—and during the two centuries that ensued, so electric was the influence of Islam, that its supremacy was established with a rapidity beyond parallel, from the sierras of Spain to the borders of China. The dominions of the Khalifs exceeded in extent the utmost empire of the Romans; and so undisputed was the sway of the new religion, that a follower of the Prophet could travel amidst believers of his own faith, from the Atlantic to the Indian Ocean, and from the chain of the Atlas to the mountains of Tartary.

Syria and Egypt were amongst its earliest conquests; and the power thus interposed between the Greeks and their former channels of trade, effectually excluded them from the commerce of India. The Persians and the Arabs became its undisputed masters, and Alexandria and Seleucia declined in importance as Bassora and Bagdad rose to the rank of Oriental emporiums.[1]

Early in the sixth century, the Persians under Chosroes Nouschirvan held a distinguished position in the East, their ships frequented the harbours of India, and their fleet was successful in an expedition against Ceylon to redress the wrongs done to some of their fellow-countrymen who had settled there for purposes of trade.[2]

The Arabs, who had been familiar with India before it was known to the Greeks[3], and who had probably availed themselves of the monsoons long before Hippalus

[1] ROBERTSON was of opinion, that such was the aversion of the Persians to the sea, that "no commercial intercourse took place between Persia and India."—*India*, s. i. p. 9. But this is at variance with the testimony of COSMAS INDICO-PLEUSTES, as well as of HAMZA of Ispahan and others.

[2] HAMZA ISPAHANENSIS, *Annal.* vol. ii. c. 2. p. 43. Petropol, 1848, 8vo. REINAUD, *Mémoire sur l'Inde*, p. 124.

[3] There is an obscure sentence in PLINY which would seem to imply that the Arabs had settled in Ceylon before the first century of our Christian era:—"Regi cultum Liberi patris, *cæteris Arabum*."—Lib. vi. c. 22.

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ventured to trust to them, began in the fourth and fifth centuries to establish themselves as merchants at Cambay and Surat, at Mangalore, Calicut, Coulam, and other Malabar ports[1], whence they migrated to Ceylon, the government of which was remarkable for its toleration of all religious sects[2], and its hospitable reception of fugitives.

It is a curious circumstance, related by BELADORY, who lived at the court of the Khalif of Bagdad in the ninth century, that an outrage committed by Indian pirates upon some Mahometan ladies, the daughters of traders who had died in Ceylon, and whose families the King Daloopiatissa II., A.D. 700, was sending to their homes in the valley of the Tigris, served as the plea under which Hadjadj, the fanatical governor of Irak, directed the first Mahometan expedition for subjugating the valley of the Indus.[3]

From the eighth till the eleventh century the Persians and Arabs continued to exercise the same influence

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[1] GILDEMEISTER, *Scriptores Arabi de Rebus Indicis*, p. 40.

[2] EDRISI, tom. i. p. 72.

[3] The chief of the Indus was the Buddhist Prince Daher, whose capital was at Daybal, near the modern Karachee. The story, as it appears in the MS. of Beladory in the library of Leyden, has been extracted by REINAUD in his *Fragmens Arabes et Persans relatifs à l'Inde*, No. v. p. 161, with the following translation:—

"Sous le gouvernement de Mohammed, le roi de l'île du Rubis (Djezyret-Alyacout) offrit à Hadjadj des femmes musulmanes qui avaient reçu le jour dans ses états, et dont les pères, livrés à la profession du commerce, étaient morts. Le prince espérait par là gagner l'amitié de Hadjadj; mais le navire où l'on avait embarqué ces femmes fut attaqué par une peuplade de race Meyd, des environs de Daybal, qui était montée sur des barques. Les Meyds enlevèrent le navire avec ce qu'il renfermait. Dans cette extrémité, une de ces femmes de la tribu de Yarboua, s'écria: 'Que n'es-tu là, oh Hadjadj!' Cette nouvelle étant parvenue à Hadjadj, il répondit: 'Me voilà.' Aussitôt il envoya un député à Dâher pour l'inviter à faire mettre ces femmes en liberté. Mais Dâher répondit: 'Ce sont des pirates qui ont enlevé ces femmes, et je n'ai aucune autorité sur les ravisseurs.' Alors Hadjadj engagea Obeyd Allah, fils de Nabhan, à faire une expédition contre Daybal."—P. 190.

The "Island of Rubies" was the Persian name for Ceylon, and in this particular instance FERISHTA confirms the identical application of these two names, vol. ii. p. 402. See *Journal Asiat.* vol. xlvi. p. 131, 163; REINAUD, *Mém. sur l'Inde*, p. 180; *Relation des Voyages*, Disc. p. xli. ABOULFEDA, *Introd.* vol. i. p. ccclxxxv.; ELPHINSTONE's *India*, b. v. ch. i. p. 260.

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over the opulent commerce of Ceylon which was afterwards enjoyed by the Portuguese and Dutch in succession between A.D. 1505, and the expulsion of the latter by the British in A.D. 1796. During this early period, therefore, we must look for the continuation of accounts regarding Ceylon to the literature of the Arabs and the Persians, and more especially to the former, by whom geography was first cultivated as a science in the eighth and ninth centuries under the auspices of the Khalifs Almansour and Almamoun. On turning to the Arabian treatises on geography, it will be found that the Mahometan writers on these subjects were for the most part grave and earnest men who, though liable equally with the imaginative Greeks to be imposed on by their informants, exercised somewhat more caution, and were more disposed to confine their writings to statements of facts derived from safe authorities, or to matters which they had themselves seen.

In their hands scientific geography combined theoretic precision, which had been introduced by their predecessors, with the extended observation incident to the victories and enlarged dominion of the Khalifs. Accurate knowledge was essential for the civil government of their conquests[1]; and the pilgrimage to Mekka, indispensable once at least in the life of every Mahometan[2], rendered the followers of the new faith acquainted with many countries in addition to their own.[3]

Hence the records of their voyages, though present-

[1] "La science géographique, comme les autres sciences en général, notammement l'astronomie, commença à se former chez les Arabes, dans la dernière moitié du viiie siècle, et se fixa dans la première moitié du ixe. On fit usage des itinéraires tracés par les chefs des armées conquérantes et des tableaux dressés par les gouverneurs de provinces; en même temps on mit à la contribution les méthodes propagées par les Indiens, les Persans, et surtout les Grecs, qui avaient apporté le plus de précision dans leurs opérations." —Reinaud, *Introd. Aboulfeda, &c.*, p. xl.

[2] Reinaud, *Introd. Aboulfeda*, p. cxxii.

[3] *Ibid.*, vol. i. p. xl.

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ing numerous exaggerations and assertions altogether incredible, exhibit a superiority over the productions of the Greeks and Romans. To avoid the fault of dulness, both the latter were accustomed to enliven their topographical itineraries, not so much by "moving accidents," and "hair-breadth 'scapes," as by mingling fanciful descriptions of monsters and natural phenomena, with romantic accounts of the gems and splendours of the East. Hence from CTESIAS to Sir JOHN MANDEVILLE, every early traveller in India had his "hint to speak," and each strove to embellish his story by incorporating with the facts he had witnessed, improbable reports collected from the representations of others. Such were their excesses in this direction, that the Greeks formed a class of "paradoxical" literature, by collecting into separate volumes the marvels and wonders gravely related by their voyagers and historians.[1]

The Arabs, on the contrary, with sounder discretion, generally kept their "travellers' histories" distinct from their sober narratives, and whilst the marvellous incidents related by adventurous seamen were received as materials for the story-tellers and romancers, the staple of their geographical works consisted of truthful descriptions of the countries visited, their forms of government, their institutions, their productions, and their trade.

In illustration of this matter-of-fact character of the Arab topographers, the most familiar example is that known by the popular title of the *Voyages of the*

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[1] Such are the *Mirabiles Auscultationes* of ARISTOTLE, the *Incredibilia* of PALEPHATES, the *Historiarum Mirabilium Collectio* of ANTIGONUS CARYSTIUS, the *Historiæ Mirabiles* of APOLLONIUS THE MEAGRE, and the Collections of PHLEGON of Tralles, MICHAEL BELLUS, and many other Greeks of the Lower Empire. For a succinct account of these compilers, see WESTERMAN'S *Παραδοξόγραφοι, Scriptores Rerum Mirabilium Græci.* Brunswick, 1839.

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two Mahometans[1], who travelled in India and China in the beginning of the ninth century. The book professes to give an account of the countries lying between Bassora and Canton; and in its unpretending style, and useful notices of commerce in those seas, it resembles the record, which the merchant ARRIAN has left us in the *Periplus*, of the same trade as it existed seven centuries previously, in the hands of the Greeks. The early portion of the book, which was written A.D. 851, was taken down from the recital of Soleyman, a merchant who had frequently made the voyages he describes, at the epoch when the commerce of Bagdad, under the Khalifs, was at the height of its prosperity. The second part was added sixty years later, by Abou-zeyd Hassan, an amateur geographer, of Bassora (contemporary with Massoudi), from the reports of mariners returning from China, and is, to a great extent, an amplification of the notices supplied by Soleyman.

SOLEYMAN describes the sea of Herkend, as it lay between the Laccadives and Maldives[2], on the west, and swept round eastward by Cape Comorin and Adam's Bridge to Ceylon, thus enclosing the precious fishery for pearls. In Serendib, his earliest attention was devoutly directed to the sacred footstep on Adam's Peak; in his name for which, "*Al-rohoun*," we trace the Buddhist name for the district, Rohuna, so often occurring in the *Mahawanso*.[3] This is the earliest notice of

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[1] It was first published by RENAUDOT in 1718, and from the unique MS. now in the Bibliothèque impériale of Paris, and again by REINAUD in 1845, with a valuable discourse prefixed on the nature and extent of the Indian trade prior to the tenth century.—*Relation des Voyages faits par les Arabes et les Persans dans l'Inde et Chine dans le* IX*e Siècle, &c.* 2 vols. 18mo. Paris, 1845.

[2] The "*Divi*" of Ammianus Marcellinus, who along with the Singhalese "*Selendivi*" sent ambassadors to the Emperor Julian, l. xxii. c. 7.

[3] A portion of the district near Tangalle is known to the present day as "Rouna."—*Mahawanso*, ch. ix. p. 57; ch. xxii. p. 130, &c.

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the Mussulman tradition, which associates the story of Adam with Ceylon, though it was current amongst the Copts in the fourth and fifth centuries.[1] On all sides of the mountain, he adds, are the mines of rubies, hyacinths, and other gems; the interior produces aloes; and the sea the highly valued chank shells, which served the Indians for trumpets.[2] The island was subject to two kings; and on the death of the chief one his body was placed on a low carriage, with the head declining till the hair swept the ground, and, as it was drawn slowly along, a female, with a bunch of leaves, swept dust upon the features, crying: "Men, behold your king, whose will, but yesterday, was law! To-day, he bids farewell to the world, and the Angel of Death has seized his spirit. Cease, any longer, to be deluded by the shadowy pleasures of life." At the conclusion of this ceremony, which lasted for three days, the corpse was consumed on a pyre of sandal, camphor, and aromatic woods, and the ashes scattered to the winds.[3] The widow of the king was sometimes burnt along with his remains, but compliance with the custom was not held to be compulsory.

Such is the account of SOLEYMAN, but, in the second part of the manuscript, ABOU-ZEYD, on the authority of another informant, IBN WAHAB, who had sailed to the same countries, speaks of the pearls of Ceylon, and adds, regarding its precious stones, that they were obtained in part from the soil, but chiefly from those points of the beach at which the rivers flowed into the sea and to which the gems are carried down by the torrents from the hills.[4]

ABOU-ZEYD describes the frequent conventions of the heads of the national religion, and the attendance of

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[1] See the account of Adam's Peak, Vol. II. Pt. VII. ch. ii.

[2] ABOU-ZEYD, *Relation, &c.*, vol. i. p. 5.

[3] *Ib.*, p. 50. The practice of burning the remains of the kings and of persons of exalted rank, continued as long as the native dynasty held the throne of Kandy.—See KNOX'S *Historical Relation of Ceylon*, A.D. 1681, Part iii. c. ii.

[4] *Ibid.*, vol. i. p. 127.

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scribes to write down from their dictation the doctrines of Buddhism, the legends of its prophets, and the precepts of its law. This statement has an obvious reference to the important events recorded in the *Mahawanso*[1] of the reduction of the tenets, orally delivered by Buddha, to their written form, as they appear in the *Pittakatayan;* to the translation of the *Atthakatha*, from Singhalese into Pali, in the reign of Mahanamo, A.D. 410–432; and to the singular care displayed, at all times, by the kings and the priesthood, to preserve authentic records of every event connected with the national religion and its history.

ABOU-ZEYD adverts to the richness of the temples of the Singhalese, and to the colossal dimensions of their statues, and dwells with particularity on their toleration of all religious sects as attested by the existence there, in the ninth century, of a sect of Manichæans, and a community of Jews.[2]

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[1] *Mahawanso*, ch. xxxiii. p. 207; ch. xxxvii. p. 252.

[2] It was to Ceylon that the terrified worshippers of Siva betook themselves in their flight, when Mahmoud of Ghuznee smote the idol and overthrew the temple of Somnaut, A.D. 1025. (FERISHTA, transl. by Briggs, vol. i. p. 71; REINAUD, *Introd. to* ABOULFEDA, vol. i. p. cccxlix. *Mémoires sur l'Inde*, p. 270.) Twenty years previously, when the same orthodox invader routed the schismatic Carmathians at Moultan, the fugitive chief of the Sheahs found an asylum in Ceylon. (REINAUD, *Journ. Asiat.*, vol. xlv. p. 283; vol. xlvi. p. 129.) The latter circumstance serves to show that the Mahometans in Ceylon have not been uniformly Sonnees, and it may probably throw light on a fact of much local interest connected with Colombo. There formerly stood there, in the Mahometan Cemetery, a stone with an ancient inscription in Cufic characters, which no one could decipher, but which was said to record the virtues of a man of singular virtue, who had arrived in the island in the tenth century. About the year 1787 A.D., one of the Dutch officials removed the stone to the spot where he was building, "and placed it where it now stands, at one of the steps to his door." This is the account given by Sir Alexander Johnston, who, in 1827, sent a copy of the inscription to the Royal Asiatic Society of London. GILDEMEISTER pronounces it to be written in Carmathic characters, and to commemorate an Arab who died A.D. 848. "Karmathacis quæ dicuntur literis exarata viro cuidam Arabo Mortuo, 948 A.D. posita, *Script. Arabi de Rebus Indicis*, p. 59. A translation of the inscription by Lee was published in *Trans. Roy. Asiat. Soc.* vol. i. p. 545, from which it appears that the deceased, Khalid Ibn Abou Bakaya, distinguished himself by obtaining "security for religion, with other advantages, in the year 317 of the Hejira." LEE was disposed to think that this might be the tomb of the Imaum Abu Abd

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Ibn Wahab, his informant, appears to have looked back with singular pleasure to the delightful voyages which he had made through the remarkable still-water channels, elsewhere described, which form so peculiar a feature in the sea-borde of Ceylon, and to which the Arabs gave the obscure term of "gobbs."[1] Here months were consumed by the mariners, amidst flowers and overhanging woods, with the enjoyments of abundant food and exhilarating draughts of arrack flavoured with honey. The natives of the island were devoted to pleasure, and their days were spent in cock-fighting and games of chance, into which they entered with so much eagerness as to wager the joints of their fingers when all else was lost.

But the most interesting passages in the narrative of Abou-zeyd are those which allude to the portion of Ceylon which served as the emporium for the active and opulent trade of which the island was then, in every sense of the word, the centre. Gibbon, on no other ground than its "capacious harbour," pronounces Trincomalie to be the port which received and dismissed the fleets of the East and West.[2] But the nautical grounds are even stronger than the historical for regarding this as improbable;—the winds and the currents, as well as its geographical position, render Trinco-

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Allah, who first taught the Mahometans the route by which pilgrims might proceed from India to the sacred footstep on Adam's Peak. But besides the discrepancy of the names, the Imaum died in the year A.D. 953, and was interred at Shiraz, where Ibn Batuta made a visit to his tomb. (*Travels*, transl. Defrémery, &c., tom. ii. p. 79.)

Edrisi, in his Geography, writing in the twelfth century, confirms the account of Abou-zeyd as to the toleration of all sects in Ceylon, and illustrates it by the fact, that of the sixteen officers who formed the council of the king, four were Buddhists, four Mussulmans, four Christians, and four Jews.—Gildemeister, *Script. Arabi*, &c., p. 53; Edrisi, 1 clim. sec. 6.

[1] "*Aghbab*," Arab. For an account of those of Ceylon, see Vol. I. Pt. I. ch. i. p. 42. The idea entertained by the Arabs of these Gobbs, will be found in a passage from Albyrouni, given by Reinaud, *Fragmens Arabes*, &c. 119, and *Journ. Asiat.* vol. xlv. p. 261. See also Edrisi, *Géog.*, tom. i. p. 73.

[2] *Decline and Fall*, ch. xl.

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malie difficult of access to vessels coming from the Red Sea or the Persian Gulf; and it is evident from the narrative of Soleyman and Ibn Wahab, that ships, availing themselves of the monsoons to cross the Indian Ocean, crept along the shore to Cape Comorin; and passed close by Adam's Bridge to reach their destined ports.[1]

An opinion has been advanced by Bertolacci that the entrepôt was Mantotte, at the northern extremity of the Gulf of Manaar. Presuming that the voyages both ways were made through the Manaar channel, he infers that the ships of Arabia and India, rather than encounter the long delay of waiting for the change of the monsoon to effect the passage, would prefer to "flock to the Straits of Manaar, and those which, from their size, could not pass the shallow water, would be unloaded, and their merchandise trans-shipped into other vessels, as they arrived from the opposite coast, or deposited in stores to await an opportunity of conveyance."[2] Hence Mantotte, he concludes, was the station chosen for such combined operations.

But Bertolacci confines his remarks to the Arabian and Indian crafts alone: he leaves out of consideration the ships of the largest size called in the *Periplus* κολανδιοφωντα, which kept up the communication between the west and east coast of India, in the time of the Romans, and he equally overlooks the great junks of the Chinese, which, by aid of the magnetic compass[3], made bold passages from Java to Malabar, and from Malabar to Oman,—vessels which (on the authority of an ancient Arabic MS.) Reinaud says carried from four to five hundred men, with

[1] ABOU-ZEYD, vol. i. p. 128; REINAUD, *Discours*, &c., pp. lx.—lxix.; *Introd.* ABOULFEDA, p. cdxii.

[2] BERTOLACCI's *Ceylon*, pp. 18, 19.

[3] The knowledge of the mariner's compass probably possessed by the Chinese prior to the twelfth century, is discussed by KLAPROTH in his "*Lettre à M. le Baron Humboldt sur l'invention de la boussole.*" Paris, 1834.

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arms and naphtha, to defend themselves against the pirates of India.[1]

On this point we have the personal testimony of the Chinese traveller Fa Hian, who at the end of the fourth century sailed direct from Ceylon for China, in a merchant vessel so large at to accommodate two hundred persons, and having in tow a smaller one, as a precaution against dangers by sea[2]: — and Ibn Batuta saw, at Calicut, in the fourteenth century, junks from China capable of accommodating a thousand men, of whom four hundred were soldiers, and each of these large ships was followed by three smaller.[3] With vessels of such magnitude, it would be neither expedient nor practicable to navigate the shallows in the vicinity of Manaar; and besides, Mantotte, or, as it was anciently called, *Mahatitta or Maha-totta* "the great ferry," although it existed as a port upwards of four hundred years before the Christian era, was at no period an emporium of commerce. Being situated so close to the ancient capital, Anarajapoora, it derived its notoriety from being the point of arrival and departure of the Malabars who resorted to the island; and the only trade for which it afforded facilities was the occasional

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[1] See the "*Katab-al-adjajab*," probably written by MASSOUDI. REINAUD, *Mémoires sur l'Inde*, p. 200; *Relation et Discours*, pp. lx. lxviii.; ABOULFEDA, *Introd.* cdxii. May not this early mention of the use of "naphtha" by the Chinese for burning the ships of an enemy, throw some light on the disquisitions adverted to by GIBBON, ch. lii. as to the nature of "the *Greek fire*," so destructive to the fleets of their assailants during the first and second siege of Constantinople in the seventh and eighth centuries? GIBBON says that the principal ingredient was naphtha, and that the Greek emperor learned the secret of its composition from a Syrian who deserted from the service of the Khalif. Did the Khalif acquire the knowledge from the Chinese, whose ships, it appears, were armed with some preparation of this nature in their voyages to Bassora?

[2] *Foë-koue-ki*, ch. xl. p. 359. In a previous passage, FA HIAN describes the large vessels in which the trade was carried between Tamlook, on the Hoogly, and Ceylon:—"A cette époque, des marchands, se mettant en mer avec de grands vaisseaux, firent route vers le sud-ouest; et au commencement de l'hiver, le vent étant favorable, après une navigation de quatorze nuits et d'autant de jours, on arriva au *Royaume des Lions*."—*Ibid.* ch. xxxvi. p. 328.

[3] IBN BATUTA, Lee's translation, p. 172.

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importation of the produce of the opposite coast of India.[1] It is not only probable, but almost certain, that during the middle ages, and especially prior to the eleventh century, when the trade with Persia and Arabia was at its height, Mantotte afforded the facilities indicated by Bertolacci to the smaller craft that availed themselves of the Paumbam passage; but we have still to ascertain the particular harbour which was the centre of the more important commerce between China and the West. That harbour I believe to have been Point de Galle.

Abou-zeyd describes the rendezvous of the ships arriving from Oman, where they met those bound for the Persian Gulf, as lying half-way between Arabia and China. "It was the centre," he says, "of the trade in aloes and camphor, in sandal-wood, ivory and lead."[2] This emporium he denominates "Kalah," and when we remember that he is speaking of a voyage which he had not himself made, and of countries then very imperfectly known to the people of the West, we shall not be surprised that he calls it an island, or rather a peninsula.

According to him, it was at that period subject to the Maharaja of Zabedj, the sovereign of a singular kingdom of which little is known, but which appears to have been formed about the commencement of the Christian era; and which, in the eighth and ninth centuries, extended over the groups of islands south and west of Malacca, including Borneo, Java, and Sumatra, which had become the resort of a vast population of Indians, Chinese, and Malays.[3] The sovereign of this opulent empire had

[1] *Mahawanso*, ch. vii. p. 51; ch. xxv. p. 155; ch. xxxv. p. 217.

[2] ABOU-ZEYD, *Relation*, &c., vol. i. p. 93; REINAUD, *Disc.* p. lxxiv.

[3] *Journ. Asiat.* vol. xlix. p. 206; ELPHINSTONE'S *India*, b. iii. ch. x. p. 168; REINAUD, *Mémoires sur l'Inde*, p. 39; *Introd.* ABOULFEDA, p. cccxc. Baron Walckenaer has ascertained, from the puranas and other Hindu sources, that the Great Dynasty of the Maharaja continued till A.D. 628, after which the islands were subdivided into numerous sovereignties. See MAJOR'S *Introduction to the Indian Voyages in the Fifteenth Century*, in the *Hakluyt Soc. Publ.* p. xxvii.

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brought under his dominion the territory of the King of Comar, the southern extremity of the Dekkan[1], and at the period when Abou-zeyd wrote, he likewise claimed the sovereignty of "Kalah."

This incident is not mentioned in the Singhalese chronicles, but their silence is not to be regarded as conclusive evidence against its probability; the historians of the Hindus ignore the expedition of Alexander the Great, and it is possible that those of Ceylon, indifferent to all that did not directly concern the religion of Buddha, may have felt little interest in the fortunes of Galle, situated as it was at the remote extremity of the island, and in a region that hardly acknowledged a nominal allegiance to the Singhalese crown.

The assertion of Abou-zeyd as to the sovereignty of the Maharaja of Zabedj, at Kalah, is consistent with the statement of Soleyman in the first portion of the work, that "the island was in subjection to two monarchs;"[2] and this again agrees with the report of Sopater to Cosmas Indico-pleustes, who adds that the king who possessed the hyacinth was at enmity with the king of the country in which were the harbour and the great emporium.[3]

But there is evidence that the subjection of this portion of Ceylon to the chief of the great insular empire was at that period currently believed in the East. In the "*Garsharsp-Namah*," a Persian poem of the tenth century, by Asedi, a manuscript of which was in the possession of Sir William Ouseley, the story turns on a naval expedition, fitted out by Delak, whose dominions extended from Persia to Palestine, and despatched at the request of the Maharaja against Baku, the King of

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[1] MASSOUDI relates the conquest of the kingdom of Comar by the Maharaja of Zabedj, nearly in the same words as it is told by Abou-zeyd; GILDEMEISTER, *Script. Arab.*, pp. 145, 146. REINAUD, *Mémoires sur l'Inde*, p. 225.

[2] *Relation*, vol. i. p. 6.

[3] Δύο δὲ βασιλεῖς εἰσὶν ἐν τῇ νήσῳ, ἐνάντιοι ἀλλήλων, ὁ εἷς ἔχων τὸν ὑάκινθον, καὶ ὁ ἕτερος τὸ μέρος τὸ ἄλλο ἐν ᾧ ἐστὶ τὸ ἐμπόριον καὶ ἡ λιμνή.
COSMAS INDIC.

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Ceylon, and in the course of the narrative, Garsharsp and his fleet reach their destination at Kalah, and there achieve a victory over the "Shah of Serendib."[1]

It must be observed, that one form of the Arabic letter K is sounded like G, so that Kalah would be pronounced *Gala.*[2] The identity, however, is established, not merely by similarity of sound, but by the concurrent testimony of Cosmas and the Arabian geographers[3], as to the nature and extent of the intercourse between China and Persia, statements which are intelligible if referred to that particular point, but inapplicable to any other.

Coupled with these considerations, however, the identity of name is not without its significance. It was the habit of the Singhalese to apply to a district the name of the principal place within it; thus Lanka, which in the epic of the Hindus was originally the capital and castle of Ravana, was afterwards applied to the island in general; and according to the *Mahawanso*, Tambapani, the point of the coast where Wijayo landed, came to designate first the wooded country that surrounded it, and eventually the whole area of Ceylon.[4] In the same manner *Galla* served to describe not only the harbour of that name, but the district north and east of it to the extent of 600 square miles, and De Barros, De Couto, and Ribeyro, the chroniclers of the Portuguese in Ceylon, record it as a tradition of the island, that the inhabitants of that region had acquired

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[1] OUSELEY'S *Travels*, vol. i. p. 48.

[2] *Kalah* may possibly be identical with the Singhalese word *gala*, which means an "enclosure," and the deeply bayed harbour of Galle would serve to justify the name. *Galla* signifies a rock, and this derivation would be equally sustained by the natural features of the place, and dangerous coral reefs which obstruct the entrance to the port.

[3] DULAURIER, in the *Journal Asiatique* for Sept. 1846, vol. xlix. p. 209, has brought together the authorities of Aboul-feda, Kazwini, and others, to show that Kalah must be situated in Ceylon, and he has combated the conjecture of M. Alfred Maury that it may be identical with Kedah in the Malay Peninsula.—REINAUD, *Relation &c. Disc.*, pp. xli.—lxxxiv., *Introd.* ABOULAFEDA p. ccxviii.

[4] *Mahawanso*, ch. vii. p. 50.

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the name of the locality, and were formerly known a
"Gallas."[1]

Galle therefore, in the earlier ages, appears to hav
occupied a position in relation to trade of equal if no
of greater importance than that which attaches to it a
the present day. It was the central emporium of a com
merce which in turn enriched every country of Wester
Asia, elevated the merchants of Tyre to the rank o
princes, fostered the renown of the Ptolemies, rendere
the wealth and the precious products of Arabia a gor
geous mystery[2], freighted the Tigris with "barbari
pearl and gold," and identified the merchants of Bagdad
and the mariners of Bassora with associations of ad
venture and romance. Yet, strange to say, the native
Singhalese appear to have taken no part whatever in
this exciting and enriching commerce; their name is
never mentioned in connection with the immigrant
races attracted by it to their shores, and the only allusions of travellers to the indigenous inhabitants of the island are in connection with a custom so remarkable and so peculiar as at once to identify the tribes to whom it is ascribed with the remnant of the aboriginal race of Veddahs, whose descendants still haunt the forests in the east of Ceylon.

Such is the aversion of this untamed race to any intercourse with civilised life, that when in want of the rude implements essential to their savage economy, they repair by night to the nearest village on the confines of their hunting-fields, and indicating by well-understood signs and models the number and form of the articles required, whether arrow-heads, hatchets, or cloths, they deposit an equivalent portion of dried deer's flesh or honey near the door of the dealer, and retire unseen to the jungles, returning by stealth within

[1] A notice of this tribe will be found in another place. See Vol. II. P. vii. ch. ii.

[2] ". . . . intactis opulentior
Thesauris Arabum, et divitiis Indiæ."
Horace.

a reasonable time, to carry away the manufactured articles, which they find placed at the same spot, in exchange.

This singular custom has been described without variation by numerous writers on Ceylon, both in recent and remote times. To trace its backwards, it is narrated, nearly as I have stated it, by Robert Knox in 1681[1]; and it is confirmed by Valentyn, the Dutch historian of Ceylon[2]; as well as by Ribeyro, the Portuguese, who wrote somewhat earlier.[3] Albyrouni, the geographer, who in the reign of Mahomet of Ghuznee, A.D. 1030, described this singular feature in the trade with the island, of which he speaks under the name of Lanka, says that it was the belief of the Arabian mariners that the parties with whom they held their mysterious dealings were demons or savages.[4]

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[1] KNOX, *Historical Relation, &c.*, part iii. ch. i. p. 62.

[2] VALENTYN, *Oud en Nieuw Oost-Indien*, ch. iii. p. 49.

[3] "Lorsqu'ils ont besoin de haches ou de flêches, ils font un modèle avec des feüilles d'arbre, et vont la nuit porter ce modèle, et la moitié d'un cerf ou d'un sanglier, à la porte d'un armurier, qui voyant le matin cette viande penduë à sa porte, sçait ce que cela veut dire : il travaille aussi-tôt et 3 jours après il pend les flêches ou les haches au même endroit où étoit la viande, et la nuit suivante le Beda les vient prendre."—RIBEYRO, *Hist. de Ceylan*, A. D. 1686, ch. xxiv. p. 179.

[4] "Les marins se réunissent pour dire que lorsque les navires sont arrivés dans ces parages, quelques uns de l'équipage montent sur des chaloupes et descendent à terre pour y déposer, soit de l'argent, soit des objets utiles à la personne des habitans, tels que des pagnes, du sel, etc. Le lendemain, quand ils reviennent, ils trouvent à la place de l'argent des pagnes et du sel, une quantité de girofle d'une valeur égale. On ajoute que ce commerce se fait avec des génies, ou, suivant d'autres, avec des hommes restés à l'état sauvage."—ALBYROUNI, *transl. by* REINAUD, *Introd. to* ABOULFEDA, sec. iii. p. ccc. See also REINAUD, *Mém. sur l'Inde*, p. 343. I have before alluded (p. 538, *n.*) to the treatise *De Moribus Brachmanorum*, ascribed to Palladius, one version of which is embodied in the spurious Life of Alexander the Great, written by the Pseudo-Callisthenes. In it the traveller from Thebes, who is the author's informant, states, that when in Ceylon, he obtained pepper from the Besadæ, and succeeded in getting so near them as to bé able to describe accurately their appearance, their low stature and feeble configuration, their large heads and shaggy uncut hair,—a description which in every particular agrees with the aspect of the Veddahs at the present day. His expression that he succeeded in "getting near" them, ἔφθασα ἐγγὺς τῶν καλουμένων Βεσάδων, shows their propensity to conceal themselves even when bringing the articles which they had collected in the woods to sell.—PSEUDO-CALLISTHENES, lib. iii. ch. vii. Paris, 1846, p. 103.

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Concurrent testimony, to the same effect, is found in the recital of the Chinese Buddhist, Fa Hian, who in the third century describes, in his travels, the same strange peculiarity of the inhabitants in those days, whom he also designates "demons," who deposited, unseen, the precious articles which they come down to barter with the foreign merchants resorting to their shores.[1]

The chain of evidence is rendered complete by a passage in Pliny, which, although somewhat obscure (facts relating to the Seres being confounded with statements regarding Ceylon), nevertheless serves to show that the custom in question was then well known to the Singhalese ambassadors sent to the Emperor Claudius, and was also familiar to the Greek traders

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[1] "Les marchands des autres royaumes y faisaient le commerce: quand le temps de ce commerce était venu, les génies et les démons ne paraissaient pas; mais ils mettaient en avant des choses précieuses dont ils marquaient le juste prix,—s'il convenait aux marchands, ceux-ci l'acquittaient et prenaient la marchandise."—FA HIAN, *Foë-kouë-ki. Transl.* RÉMUSAT, ch. xxxviii. p. 332.

There are a multitude of Chinese authorities to the same effect. One of the most remarkable books in any language is a Chinese Encyclopædia which, under the title of *Wen-hian-thoung-khao*, or "*Researches into ancient Monuments*," contains a history of every art and science from the commencement of the empire to the era of the author MA-TOUAN-LIN, who wrote in the thirteenth century. M. Stanislas Julien has published in the *Journal Asiatique* for July 1836 a translation of that portion of this great work which has relation to Ceylon. It is there stated of the aborigines that when "les marchands des autres royaumes y venaient commercer, *ils ne laissaient pas voir leurs corps*, et montraient au moyen de pierres précieuses le prix que pouvaient valoir les marchandises. Les marchands venaient et en prenaient une quantité équivalente à leurs marchandises."—*Journ. Asiat.* t. xxviii. p. 402; xxiv. p. 41. I have extracts from seven other Chinese works, written between the seventh and the twelfth centuries, in all of which there occurs the same account of Ceylon,—that it was formerly supposed to be inhabited by dragons and demons, and that when "merchants from all nations come to trade with them, they are invisible, but leave their precious wares spread out with an indication of the value set on them, and the Chinese take them at the prices stipulated."—*Leang-shoo*, "History of the Leang Dynasty," A.D. 630, b. liv. p. 13. *Nan-she*, "History of the Southern Empire," A.D. 650, p. xxxviii. p. 14. *Tung-teen*, "Cyclopædia of History," A.D. 740, b. cxciii. p. 8. The *Tae-ping*, a "Digest of History," compiled by Imperial command, A.D. 983, b. dccxciii. p. 9. *Tsih-foo-yuen-kwei*, the "Great Depositary of the National Archives, A.D. 1012, b. cccclvi. p. 21. *Sin-Tang-shoo*, "New History of the Tang Dynasty," A.D. 1060, b. cxlvi. part ii. p. 10. *Wan-heen-tung-Kwan*, "Antiquarian Researches," A.D. 1319, b. cccxxxviii. p. 24.

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resorting to the island. The envoys stated, at Rome, that the habit of the people of their country was, on the arrival of traders, to go to "the further side of some river where wares and commodities are laid down by the strangers, and if the natives list to make exchange, they have them taken away, and leave other merchandise in lieu thereof, to content the foreign merchant."[1]

The fact, thus established, of the aversion to commerce, immemorially evinced by the southern Singhalese, and of their desire to escape from intercourse with the strangers resorting to trade on their coasts, serves to explain the singular scantiness of information regarding the interior of the island which is apparent in the writings of the Arabians and Persians, between the eighth and thirteenth centuries. Their knowledge of the coast was extensive, they were familiar with the lofty mountain which served as its landmark, they dwell with admiration on its productions, and record with particularity the objects of commerce which were to be found in the island; but, regarding the Singhalese themselves and their social and intellectual condition, little, if any, real information is to be gleaned from the Oriental geographers of the middle ages.

ALBATENY and MASSOUDI, the earliest of the Arabian geographers[2], were contemporaries of Abou-zeyd, in the ninth century, and neither adds much to the descrip-

[1] PLINY, *Nat. Hist.*, lib. vi. ch. xxiv. Transl. Philemon Holland, p. 130. This passage has been sometimes supposed to refer to the Seræ, but a reference to the text will confirm the opinion of MARTIANUS and SOLINUS, that Pliny applies it to the Singhalese; and that the allusion to red hair and grey eyes, "rutilis comis" and "cæruleis oculis," applies to some northern tribes whom the Singhalese had seen in their overland journeys to China. "Later travellers," says COOLEY, "have likewise had glimpses, on the frontiers of India, of these German features; but nothing is yet known with certainty of the tribe to which they properly belonged."—*Hist. Inland and Maritime Discovery*, vol. i. p. 71.

[2] Probably the earliest allusion to Ceylon by any Arabian or Persian author, is that of Tabari, who was born in A.D. 838; but he limits his notices to an exaggerated account of Adam's Peak, "than which the whole world does not contain a mountain of greater height."—OUSELEY'S *Travels*, vol. i. p. 34, *n.*

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tion of Ceylon, given in the narratives of "*The two Mahometans.*" The former assigns to the island the fabulous dimensions ascribed to it by the Hindus, and only alludes to the ruby and the sapphire[1] as being found in the rivers that flow from its majestic mountains. MASSOUDI asserts that he visited Ceylon[2], and describes, from actual knowledge, the funeral ceremonies of a king, and the incremation of his remains; but as these are borrowed almost verbatim from the account given by Soleyman[3], there is reason to believe that he merely copied from Abou-zeyd the portions of the "*Meadows of Gold*"[4] that have relation to Ceylon.

In the order of time, this is the place to allude to another Arabian mariner, whose voyages have had a world-wide renown, and who, more than any other author, ancient or modern, has contributed to familiarise Europe with the name and wonders of Serendib. I allude to "Sindbad of the Sea," whose voyages were first inserted by Galland, in his French translation of the "*Thousand-and-one Nights.*" Sindbad, in his own tale, professes to have lived in the reign of the most illustrious Khalif of the Abbassides.

> "Sole star of all that place and time;—
> And saw him, in his golden prime,
> The good Haroun Alraschid."

But Haroun died, A.D. 808, and Sindbad's narrative is so manifestly based on the recitals of Abou-zeyd and Massoudi, that although the author may have lived

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[1] "Le rubis rouge, et la pierre qui est couleur de ciel." ALBATENY, quoted by Reinaud, *Introd.* ABOULFEDA, p. ccclxxxv.

[2] MASSOUDI in Gildemeister, *Script. Arab.* p. 154. Gildemeister discredits the assertion of Massoudi, that he had been in Ceylon. (*Ib.* p. 154, *n.*) He describes Kalah as an island distinct from Serendib.

[3] ABOU-ZEYD, *Relation*, &c., p. 50.

[4] A translation of MASSOUDI'S *Meadows of Gold* in English was begun by Dr. Sprenger for the "Oriental Translation Fund," but it has not advanced beyond the first volume, which was published in 1841.

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shortly after, it is scarcely possible that he could have been a contemporary of the great ruler of Bagdad.[1]

One inference is clear, from the story of Sindbad, that whilst the sea-coast of Ceylon was known to the Arabians, the interior had been little explored by them, and was so enveloped in mystery that any tale of its wonders, however improbable, was sure to gain credence. Hence, what Sindbad relates of the shore and its inhabitants is devoid of exaggeration: in his first visit the natives who received him were Malabars, one of whom had learned Arabic, and they were engaged in irrigating their rice lands from a tank. These are incidents which are characteristic of the north-western coast of Ceylon at the present day; and the commerce, for which the island was remarkable in the ninth and tenth centuries is implied by the expression of Sindbad, that on the occasion of his next voyage, when bearing presents and a letter from the Khalif to the King of Serendib, he embarked at Bassora in a ship, and with him "were many merchants."

Of the Arabian authors of the middle ages the one who dwells most largely on Ceylon is EDRISI, born of a family who ruled over Malaga after the fall of the Khalifs of Cordova. He was a *protégé* of the Sicilian king, Roger the Norman, at whose desire he compiled his Geography, A.D. 1154. But with regard to Ceylon, his pages contain only the oft-repeated details of the height of the holy mountain, the gems found in its ravines, the musk, the perfumes, and odoriferous woods

[1] REINAUD notices the *Ketab-ala-jayb*, or "Book of Wonders," of MASSOUDI, as one of the works whence the materials of Sindbad's Voyages were drawn. (*Introd.* ABOULFEDA, vol. i. p. lxxvii.) HOLE published in 1797 A.D. his learned *Remarks on the Origin of Sindbad's Voyages*, and in that work, as well as in LANGLE's edition of Sindbad; and in the notes by LANE to his version of the *Arabian Nights' Entertainment*," Edrisi, Kazwini, and many other writers are mentioned whose works contain parallel statements. But though Edrisi and Kazwini wrote in the twelfth and thirteenth centuries, it does not follow that the author of Sindbad lived later than they, as both may have borrowed their illustrations from the same early sources.

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which abound there.[1] He particularises twelve cities, but their names are scarcely identifiable with any now known.[2] The sovereign, who was celebrated for the mildness of his rule, was assisted by a council of sixteen, of whom four were of the national religion, four Christians, four Mussulmans, and four Jews; and one of the chief cares of the government was given to keeping up the historical records of the reigns of their kings, the lives of their prophets, and the sacred books of their law.

Ships from China and other distant countries resorted to the island, and hither "came the wines of Irak, and Fars, which are purchased by the king, and sold again to his subjects; for, unlike the princes of India, who encourage debauchery but strictly forbid wine, the King of Serendib recommends wine and prohibits debauchery." The exports of the island he describes as silk, precious stones of every hue, rock-crystal, diamonds, and a profusion of perfumes.[3]

The last of this class of writers to whom it is necessary to allude is Kazwini, who lived at Bagdad in the thirteenth century, and, from the diversified nature of his writings, has been called the Pliny of the East. In his geographical account of India, he includes Ceylon, but it is evident from the details into which he enters of the customs of the court and the people, the burning of the widows of the kings on the same pile with their husbands, that the information he had received had been collected amongst the Brahmanical, not the Buddhist portion of the people. This is confirmatory of the actual condition of the people of Ceylon at the period as shown by the native chronicles, the king being

[1] Edrisi mentions, that at that period the sugar-cane was cultivated in Ceylon.

[2] Marnaba, (*Manaar?*) Aghna Perescouri, (*Periatorre?*) Aide, Mahouloun, (*Putlam?*) Hamri, Telmadi, (*Talmanaar?*) Lendouma, Sedi, Hesli, Beresli and Medouna (*Matura?*). "Aghna" or "Ana," as Edrisi makes it the residence of the king, must be Anarajapoora.

[3] Edrisi, *Géogr.* Transl. de Jaubert, 4to. Paris, 1836, t. i. p. 71, etc. Edrisi, in his "Notice of Ceylon," quotes largely and verbatim from the work of Abou-zeyd.

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the Malabar Magha, who invaded the island from Calinga 1219 A.D., overthrew the Buddhist religion, desecrated its monuments and temples, and destroyed the edifices and literary records of the capital.[1]

KAZWINI, as usual, dwells on the productions of the island, its spices, and its odours, its precious woods and medical drugs, its profusion of gems, its gold and silver work, and its pearls[2], but one circumstance will not fail to strike the reader as a strange omission in these frequent enumerations of the exports of Ceylon. I have traced them from their earliest notices by the Greeks and Romans to the period when the commerce of the East had reached its climax in the hands of the Persians and Arabians; the survey extends over fifteen centuries, during which Ceylon and its productions were familiarly known to the traders of all countries, and yet in the pages of no author, European or Asiatic, from the earliest ages to the close of the thirteenth century, is there the remotest allusion to *Cinnamon* as an indigenous production, or even as an article of commerce in Ceylon. I may add, that I have been equally unsuccessful in finding any allusion to it in any Chinese work of ancient date.[3]

This unexpected result has served to cast a suspicion on the title of Ceylon to be designated *par excellence* the "Cinnamon Isle," and even with the knowledge that the cinnamon laurel is indigenous there, it admits of but little doubt that the spice which in the earlier ages was imported into Europe through Arabia, was obtained, first from Africa, and afterwards from India; and that it was not till after the twelfth or thirteenth century that its

[1] *Mahawanso*, ch. lxxx. *Rajaratnacari*, p. 93; *Rajavali*, p. 256. TURNOUR'S *Epitome, &c.*, p. 44.

[2] KAZWINI, in Gildemeister, *Script. Arab.* p. 198.

[3] In the Chinese Materia Medica, "*Pun-tsao-kang-muh*," cinnamon or cassia is described under the name of "*kwei*," but always as a production of Southern China and of Cochin China. In the Ming History, a production of Ceylon is mentioned under the name of "*Shoo-heang*," or "tree-perfume;" but my informant, Mr. Wylie, of Shanghae, is unable to identify it with cinnamon oil.

existence in Ceylon became known to the merchants resorting to the island. So little was its real history known in Europe, even at the latter period, that Phile, who composed his metrical treatise, Περὶ Ζώων Ἰδιότητος, for the information of the Emperor Michael XI. (Palæologus), about the year 1310, repeats the ancient fable of Herodotus, that cinnamon grew in an unknown Indian country, whence it was carried by birds, from whose nests it was abstracted by the natives of Arabia.[1]

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[1] Ὄρνις ὁ κιννάμωμος ὠνομασμένος
Τὸ κιννάμωμον εὗρεν ἀγνοούμενον,
Ὑφ' οὗ καλιὰν ὀργανοῖ τοῖς φιλτάτοις
Μᾶλλον δὲ τοῖς μέλασιν Ἰνδοῖς, αὐτάναξ
Ἀρωματικὴν ἡδονὴν διαπλέκει.

Phile, xxviii.

Vincent, in scrutinising the writings of the classical authors, anterior to Cosmas, who treated of Taprobane, was surprised to discover that no mention of cinnamon as a production of Ceylon was to be met with in Pliny, Dioscorides, or Ptolemy, and that even the author of the mercantile *Periplus* was silent regarding it. (Vol. ii. p. 512.) D'Herbelot has likewise called attention to the same fact. (*Bibl. Orient.* vol. iii. p. 308.) This omission is not to be explained by ascribing it to mere inadvertence. The interest of the Greeks and Romans was naturally excited to discover the country which produced a luxury so rare as to be a suitable gift for a king; and so costly, that a crown of cinnamon tipped with gold was a becoming offering to the gods. But the Arabs succeeded in preserving the secret of its origin, and the curiosity of Europe was baffled by tales of cinnamon being found in the nest of the Phœnix, or gathered in marshes guarded by monsters and winged serpents.. Pliny appears to have been the first to suspect that the most precious of spices came not from Arabia, but from Æthiopia (lib. xii. c. xlii.); and Cooley, in an argument equally remarkable for ingenuity and research, has succeeded in demonstrating the soundness of this conjecture, and establishing the fact that the cinnamon brought to Europe by the Arabs, and afterwards by the Greeks, came chiefly from the eastern angle of Africa, the tract around Cape Gardafui, which is marked on the ancient maps as the *Regio Cinnamomifera.* (Journ. Roy. Georg. Society, 1849, vol. xix. p. 166.) Cooley has suggested in his learned work on "*Ptolemy and the Nile,*" that the name *Gardafui* is a compound of the Somali word *gard,* "a port," and the Arabic *afhaoni,* a generic term for aromata and spices. It admits of no doubt that the cinnamon of Ceylon was unknown to commerce in the sixth century of our era; although there is evidence of a supply which, if not from China, was probably carried in Chinese vessels at a much earlier period, in the Persian name *dar chini,* which means "*Chinese wood,*" and in the ordinary word "cinn-amon," "*Chinese amomum,*" a generic name for aromatic spices generally. (Nees Von Esenbach, *de Cinnamono Disputatio,* p. 12.) Ptolemy, equally with Pliny, placed the "Cinnamon Region" at the north-eastern extremity of Africa, now the country of the Somaulees; and the author of the *Periplus,* mindful of his object, in writing a guide-book for merchant-seamen, particularises cassia amongst the exports of the same coast; but although he enumerates the productions of Ceylon, gems, pearls, ivory, and tortoise-shell, he is silent as to cinnamon. Dioscorides and Galen, in common

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The first authentic notice which we have of Singhalese cinnamon occurs in the voyages of Ibn Batuta the Moor,

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with the travellers and geographers of the ancients, ignore its Singhalese origin, and unite with them in tracing it to the country of the Troglodytæ. I attach no importance to those passages in WAGENFELD's version of *Sanchoniathon*, in which, amongst other particulars, obviously describing Ceylon under the name of "the island of Rachius," which he states to have been visited by the Phœnicians; he says, that the western province produced the finest cinnamon (*κίνναμῳ πολλῷ τε καὶ διαφέροντι*), that the mountains abounded in cassia (*κασια ἀρωματικωτάτη*), and that the minor kings paid their tribute in both, to the paramount sovereign. (SANCHONIATHON, ed. Wagenfeld, Bremen, 1837, lib. vii. ch. xii). The MS. from which Wagenfeld printed, is evidently a mediæval forgery (see note (A) to vol. i. ch. v. p. 571). Again, it is equally strange that the writers of Arabia and Persia preserve a similar silence as to the cinnamon of the island, although they dwell with due admiration on its other productions, in all of which they carried on a lucrative trade. Sir WILLIAM OUSELEY, after a fruitless search through the writings of their geographers and travellers, records his surprise at this result, and mentions especially his disappointment, that Ferdousi, who enriches his great poem with glowing descriptions of all the objects presented by surrounding nations to the sovereigns of Persia, — ivory, ambergris, and aloes, vases, bracelets, and jewels,— never once adverts to the exquisite cinnamon of Ceylon. —*Travels*, vol. i. p. 41.

The conclusion deducible from fifteen centuries of historic testimony is, that the earliest knowledge of cinnamon possessed by the western nations was derived from China, and that it first reached Judea and Phœnicia overland by way of Persia (Song of Solomon, iv. 14: Revelation xviii. 13). At a later period when the Arabs, "the merchants of Sheba," competed for the trade of Tyre, and carried to her "the chief of all spices" (Ezekiel xvii. 22), their supplies were drawn from their African possessions, and the cassia of the Troglodytic coast supplanted the cinnamon of the far East, and to a great extent excluded it from the market. The Greeks having at length discovered the secret of the Arabs, resorted to the same countries as their rivals in commerce, and surpassing them in practical navigation and the construction of ships, the Sabæans were for some centuries reduced to a state of mercantile dependence and inferiority. In the meantime the Roman Empire declined; the Persians under the Sassanides engrossed the intercourse with the East, the trade of India now flowed through the Persian Gulf, and the ports of the Red Sea were deserted. "Thus the downfall, and it may be the extinction, of the African spice trade probably dates from the close of the sixth century, and Malabar succeeded at once to this branch of commerce. — COOLEY, *Regio Cinnamomifera*, p. 14. Cooley supposes that the Malabars may have obtained from Ceylon the cinnamon with which they supplied the Persians; as Ibn Batuta, in the fourteenth century, saw cinnamon trees drifted upon the shores of the island, whither they had been carried by torrents from the forests of the interior (*Ibn Batuta*, ch. xx. p. 182). The fact of their being found so is in itself sufficient evidence, that down to that time no active trade had been carried on in the article; and the earliest travellers in the thirteenth and fourteenth centuries, MARCO POLO, JOHN OF HESSE, FRA JORDANUS and others, whilst they allude to cinnamon as one of the chief productions of Malabar, speak of Ceylon, notwithstanding her wealth in jewels and pearls, as if she were utterly destitute of any spice of this kind. NICOLA DE CONTI,

who, impelled by religious enthusiasm, set out from his native city Tangiers, in the year 1324, and devoted

A.D. 1444, is the first European writer, in whose pages I have found Ceylon described as yielding cinnamon, and he is followed by Varthema, A.D. 1506, and Corsali, A.D. 1515.

Long after the arrival of Europeans in Ceylon, cinnamon was only found in the forests of the interior, where it was cut and brought away by the Chalias, the caste who, from having been originally weavers, devoted themselves to this new employment. The Chalias are themselves an immigrant tribe, and, according to their own tradition, they came to the island only a very short time before the appearance of the Portuguese. (See a *History of the Chalias*, by ADRIAN RAJAPAKSE, *a Chief of the Caste*, *Asiat. Reser.* vol. iii. p. 440.) So difficult of access were the forests, that the Portuguese could only obtain a full supply from them once in three years; and the Dutch, to remedy this uncertainty, made regular plantations in the vicinity of their forts about the year 1770 A. D., "*so that the cultivation of cinnamon in Ceylon is not yet a century old.*"—COOLEY, p. 15. It is a question for scientific research rather than for historical scrutiny, whether the cinnamon laurel of Ceylon, as it exists at the present day, is indigenous to the island, or whether it is identical with the cinnamon of Abyssinia, and may have been carried thence by the Arabs; or whether it was brought to the island from the adjacent continent of India; or imported by the Chinese from islands still further to the east. One fact is notorious at the present day, that nearly the whole of the cinnamon grown in Ceylon is produced in a small and well-defined area occupying the S.W. quarter of the island, which has been at all times the resort of foreign shipping. The natives, from observing its appearance for the first time in other and unexpected places, believe it to be sown by the birds who carry thither the undigested seeds; and the Dutch, for this reason, prohibited the shooting of crows,—a precaution that would scarcely be necessary for the protection of the plant, had they believed it to be not only indigenous, but peculiar to the island. We ourselves were led, till very recently, to imagine that Ceylon enjoyed a "natural monopoly" of cinnamon.

Mr. THWAITES, of the Royal Botanic Gardens at Kandy, is of opinion from his own observation, that cinnamon is indigenous to Ceylon, as it is found, but of inferior quality, in the central mountain range, as high as 3000 feet above the level of the sea—and again in the sandy soil near Batticaloa on the east coast, he saw it in such quantity as to suggest the idea that it must be the remains of former cultivation. This statement of Mr. Thwaites is quite in consistency with the narrative of VALENTYN (ch. vii.), that the Dutch, on their first arrival in Ceylon, A.D. 1601-2, took on board cinnamon at Batticaloa,—and that the surrounding district continued to produce it in great abundance in A.D. 1726. (*Ib.* ch. xv. p. 223, 224.) Still it must be observed that its appearance in these situations is not altogether inconsistent with the popular belief that the seeds may have been carried there by birds.

Finding that the Singhalese works accessible to me, the *Mahawanso*, the *Rajavali*, the *Rajaratnacari*, *&c.*, although frequently particularising the aromatic shrubs and flowers planted by the pious care of the native sovereigns, made no mention of cinnamon, I am indebted to the good offices of the Maha-Moodliar de Sarem, of Mr. De Alwis, the translator of the *Sidath-Sangara*, and of Mr. Spence Hardy, the learned historian of Buddhism, for a thorough examination of such native books as were likely to throw light on the question. Mr. Hardy writes to me that he has not met with the word cinnamon (*kurundu*) in any early Singhalese books; but there is men-

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twenty-eight years to a pilgrimage, the record of which has entitled him to rank amongst the most remarkable travellers of any age or country.

On his way to India, he visited, in Shiraz, the tomb of the Imaum Abu Abd Allah, "who made known the way from India to the mountain of Serendib." As this saint died in the year of the *Hejira* 331, his story serves to fix the origin of the Mahometan pilgrimages to Adam's Peak, in the early part of the tenth century. When steering for the coast of India, from the Maldives, Ibn Batuta was carried by the south-west monsoon towards the northern portion of Ceylon, which was then (A.D. 1347) in the hands of the Malabars, the Singhalese sovereign having removed his capital southward to Gampola. The Hindu chief of Jaffna was at this time in possession of a fleet in "which he occasionally transported

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tion of a substance called "*paspalawata*," of which cinnamon forms one of the ingredients. Mr. de Alwis has been equally unsuccessful, although in the *Saraswate Nigardu*, an ancient Sanskrit Catalogue of Plants, the true cinnamon is spoken of as *Sinhalam*, a word which signifies "belonging to Ceylon" to distinguish it from cassia, which is found in Hindustan. The Maha-Moodliar, as the result of an investigation made by him in communication with some of the most erudite of the Buddhist priesthood familiar with Pali and Singhalese literature, informs me that whilst cinnamon is alluded to in several Sanskrit works on Medicine, such as that of Susruta, and thence copied into Pali translations, its name has been found only in Singhalese works of comparatively modern date, although it occurs in the treatise on Medicine and Surgery popularly attributed to King Bujas Raja, A.D. 339. Lankagodde, a learned priest of Galle, says that the word *lawanga* in an ancient Pali vocabulary means cinnamon, but I rather think this is a mistake, for *lawanga* or *lavanga* is the Pali name for "cloves," that for cinnamon being *lamago*.

The question therefore remains in considerable obscurity. It is difficult to understand how an article so precious could exist in the highest perfection in Ceylon, at the period when the island was the very focus and centre of Eastern commerce, and yet not become an object of interest and an item of export. And although it is sparingly used in the Singhalese cuisine, still looking at its many religious uses for decoration and incense, the silence of the ecclesiastical writers as to its existence is not easily accounted for.

The explanation may possibly be, that cinnamon, like coffee, was originally a native of the east angle of Africa; and that the same Arabian adventurers who carried coffee to Yemen, where it flourishes to the present day, may have been equally instrumental in introducing cinnamon into India and Ceylon. In India its cultivation, probably from natural causes, proved unsuccessful; but in Ceylon the plant enjoyed that rare combination of soil, temperature, and climate, which ultimately gave to its qualities the highest possible development.

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his troops against the Mahometans on other parts of the coast;" where the Singhalese chroniclers relate that the Tamils at this time had erected forts at Colombo, Negombo, and Chilaw.

Ibn Batuta was permitted to land at Battala (Putlam) and found the shore covered with "cinnamon wood," which "the merchants of Malabar transport without any other price than a few articles of clothing which are given as presents to the king. This may be attributed to the circumstance that it is brought down by the mountain torrents, and left in great heaps upon the shore."

This passage is interesting, though not devoid of obscurity, for cinnamon is not known to grow further north than Chilaw, nor is there any river in the district of Putlam which could bear the designation of a "mountain torrent." Along the coast further south the cinnamon district commences, and the current of the sea may have possibly carried with it the uprooted laurels described in the narrative. The whole passage, however, demonstrates that at that time, at least, Ceylon had no organised trade in the spice.

The Tamil chieftain exhibited to Ibn Batuta his wealth in "pearls," and under his protection he made the pilgrimage to the summit of Adam's Peak accompanied by four jyogees who visited the foot-mark every year, "four Brahmans, and ten of the king's companions, with fifteen attendants carrying provisions." The first day he crossed a river, (the estuary of Calpentyn?) on a boat made of reeds, and entered the city of Manar Mandali; probably the site of the present Minneri Mundal. This was the "extremity of the territory of the infidel king," whence Ibn Batuta proceeded to the port of Salawat (Chilaw), and thence (turning inland) he reached the city of the Singhalese sovereign at Gampola, then called Ganga-sri-pura, which he contracts into Kankar or Ganga.[1]

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[1] As he afterwards writes, Galle "Kale."

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He describes accurately the situation of the ancient capital, in a valley between two hills, upon a bend of the river called, "the estuary of rubies." The emperor he names "Kina," a term I am unable to explain, as the prince who then reigned was probably Bhuwanekabahu IV., the first Singhalese monarch who held his court at Gampola.

The king on feast days rode on a white elephant, his head adorned with very large rubies, which are found in his country, embedded in "a white stone abounding in fissures, from which they cut it out and give it to the polishers." Ibn Batuta enumerates three varieties, "the red, the yellow, and the cornelian;" but the last must mean the sapphire, the second the topaz; and the first refers, I apprehend, to the amethyst; for in the following passage, in describing the decorations of the head of the white elephant, he speaks of "seven rubies, each of which was larger than a hen's egg," and a saucer made of a ruby as broad as the palm of the hand.

In the ascent from Gampola to Adam's Peak, he speaks of the monkeys with beards like a man (*Presbyter ursinus*, or *P. cephalopterus*), and of the "fierce leech," which lurks in the trees and damp grass, and springs on the passers by. He describes the trees with leaves that never fall, and the "red roses" of the rhododendrons which still characterise that lofty region. At the foot of the last pinnacle which crowns the summit of the peak, he found a minaret named after Alexander the Great[1]; steps hewn out of the rock, and "iron pins to which chains are appended" to assist the pilgrims in their ascent; a well filled with fish, and last of all, on

[1] In oriental tradition, Alexander is believed to have visited Ceylon in company with the "philosopher Bolinus," by whom De Sacy believes that the Arabs meant Apollonius of Tyana. There is a Persian poem by ASHREF, the *Zaffer Namah Skendari*, which describes the conqueror's voyage to Serendib, and his devotions at the foot-mark of Adam, for reaching which, he and Bolinus caused steps to be hewn in the rock, and the ascent secured by rivets and chains. —See OUSELEY's *Travels*, vol. i. p. 58.

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the loftiest point of the mountain, the sacred foot-print of the First Man, into the hollow of which the pilgrims drop their offerings of gems and gold.

In descending the mountain, Ibn Batuta passed through the village of Kalanga, near which was a tomb, said to be that of Abu Abd Allah Ibn Khalif[1]; he visited the temple of Dinaur (Devi-Neuera, or Dondera Head), and returned to Putlam by way of Kale (Galle) and Kolambu (Colombo), "the finest and largest city in Serendib."

[1] Abu Abd Allah was the first who led the Mahometan pilgrims to Ceylon. The tomb alluded to was probably a *cenotaph* in his honour; as Ibn Batuta had previously visited his tomb at Shiraz.

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CHAP. III.

CEYLON AS KNOWN TO THE CHINESE.

ALTHOUGH the intimate knowledge of Ceylon acquired by the Chinese at an early period, is distinctly ascribable to the sympathy and intercourse promoted by community of religion, there is traditional, if not historical evidence that its origin, in a remote age, may be traced to the love of gain and their eagerness for the extension of commerce. The Singhalese ambassadors who arrived at Rome in the reign of the Emperor Claudius, stated that their ancestors had reached China by traversing India and the Himalayan mountains long before ships had attempted the voyage by sea[1], and as late as the fifth century of the Chinese era, the King of Ceylon[2], in an address delivered by his envoy to the Emperor of China, shows that both routes were then in use.[3]

It is not, however, till after the third century of the Christian era that we find authentic records of such journeys in the literature of China. The Buddhist pilgrims, who at that time resorted to India, published on their return itineraries and descriptions of the distant countries they had visited, and officers, both military and civil, brought back memoirs and statistical statements for the information of the government and the guidance of commerce.[4]

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[1] PLINY, b. vi. ch. xxiv.

[2] Maha Naama, A.D. 428; *Sung-shoo*, a "History of the Northern Sung Dynasty," b. xcvii. p. 5.

[3] It was probably the knowledge of the overland route that led the Chinese to establish their military colonies in Kashgar, Yarkhand and the countries lying between their own frontier and the north-east boundary of India.—*Journ. Asiat.* l. vi. p. 343. An embassy from China to Ceylon, A.D. 607, was entrusted to *Chang-Tsuen*, "Director of the Military Lands." — *Suy-shoo*, b. lxxxi. p. 3.

[4] REINAUD, *Mémoire sur l'Inde*,

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It was reasonable to anticipate that in such records information would be found regarding the condition of Ceylon as it presented itself from time to time to the eyes of the Chinese; but unfortunately numbers of the original works have long since perished, or exist only in extracts preserved in dynastic histories and encyclopedias, or in a class of books almost peculiar to China, called "tsung-shoo," consisting of excerpts reproduced from the most ancient writers. M. Stanislas Julien discovered in the *Pien-i-tien*, ("a History of Foreign Nations," of which there is a copy in the Imperial Library of Paris,) a collection of fragments from Chinese authors who had treated of Ceylon; but as the intention of that eminent Sinologue to translate them[1] has not yet been carried into effect, they are not available to me for consultation. In this difficulty I turned for assistance to China; and through the assiduous kindness of Mr. Wylie, of the London Mission at Shanghai, I have received extracts from twenty-four Chinese writers between the fifth and eighteenth centuries, from which and from translations of Chinese travels and topographies made by Remusat, Klaproth, Landresse, Pauthier, Stanislas Julien, and others, I have been enabled to collect the following facts relative to the knowledge of Ceylon possessed by the Chinese in the middle ages.[2]

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p. 9. STANISLAS JULIEN, preface to his translation of *Hiouen-Thsang*, Paris, 1853, p. 1. A bibliographical notice of the most important Chinese works which contain descriptions of India, by M. S. JULIEN, will be found in the *Journ. Asiat.* for October, 1832, p. 264.

[1] *Journ. Asiat.* t. xxix. p. 39. M. Stanislas Julien is at present engaged in the translation of the *Si-yu-ki*, or "Mémoires des Contrées Occidentales," the eleventh chapter of which contains an account of Ceylon in the eighth century.

[2] The Chinese works referred to in the following pages are. — *Sung-shoo*, the "History of the Northern Sung Dynasty," A.D. 417—473, by CHIN-YŎ, written about A.D. 487. — *Wei-shoo*, "a History of the Wei Tartar Dynasty," A.D. 386—556, by WEI-SHOW, A.D. 590.—*Foĕ-Kouĕ Ki*, an "Account of the Buddhist Kingdoms," by CHY-FĂ-HIAN, A.D. 399—414, French transl., by Rémusat, Klaproth, and Landresse. Paris, 1836. —*Leang-shoo*, "History of the Leang Dynasty," A.D. 502—557, by YAOU-SZE-LEEN, A.D. 630.—*Suy-shoo*, "History of the Suy Dynasty," A.D. 581—617, by WEI-CHING, A.D. 633.

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Like the Greek geographers, the earliest Chinese authorities grossly exaggerated the size of Ceylon: they represented it as lying "cross-wise in the Indian ocean [1], and extending in width from east to west one third more than in depth from north to south.[2] They were struck by the altitude of its hills, and, above all, by the lofty crest of Adam's Peak, which served as the land-mark for ships approaching the island. They speak reverentially of the sacred foot-mark [3] impressed

—HIOUEN-THSANG. His Life and Travels, A.D. 645, French transl., by Stanislas Julien. Paris, 1853. — *Nan-shè*, "History of the Southern Empire," A.D. 317—589, by LE-YEN-SHOW, A.D. 650.—*Tung-tëen*, "Cyclopædia of History," by TOO-YEW, A.D. 740. — KÉ-NËË *si-yih hing-Ching*, "Itinerary of KÉ-NËË's Travels in the Western Regions," from A.D. 964—976. — *Tae-ping yu-lan*, "The Taeping Digest of History," compiled by Imperial Command, A.D. 983. — *Tsih-foo yuen-Kwei*, "Great Depository of the National Archives," compiled by Imperial Command, A.D. 1012.—*Sin-Tang-shoo*, "A New History of the Tang Dynasty," A.D. 618—906, by GOW-YANG-SEW and SING-KÉ, A.D. 1060.—*Tung-che*, "National Annals," by CHING-TSEAOU, A.D. 1150.—*Wăn-hëen tung-kaou*, "Antiquarian Researches," by MA-TWAN-LIN, A.D. 1319. Of this remarkable work there is an admirable analysis by Klaproth in the *Asiatic Journal* for 1832, vol. xxxv. p. 110, and one still more complete in the *Journal Asiatique*, vol. xxi. p. 3. The portion relating to Ceylon has been translated into French by M. Pauthier in the *Journal Asiatique* for April, 1836, and again by M. Stanislas Julien in the same Journal for July, 1836, t. xxix. p. 36. — *Yŭh-hae*, "The Ocean of Gems," by WANG-YANG-LIN, A.D. 1338. — *Taou-e cheleŏ*, "A General Account of Island Foreigners," by WANG-TA-YOUEN, A.D. 1350.—*Tsih-ké*, "Miscellaneous Record;" written at the end of the Yuen dynasty, about the close of the fourteenth century. — *Po-wŭh yaoulan*, "Philosophical Examiner;" written during the Ming dynasty, about the beginning of the fifteenth century. —*Se-yih-ke foo-choo*, "A Description of Western Countries," A.D. 1450. This is the important work of which M. Stanislas Julien has recently published the first volume of his French translation, *Mémoires des Contrées Occidentales*, Paris, 1857; and of which he has been so obliging as to send me those sheets of the second volume, now preparing for the press, which contain the notices of Ceylon by HIOUEN-THSANG. They, however, add very little to the information already given in the *Life and Travels of Hiouen-Thsang*. — *Woo-heŏ-pëen*, "Records of the Ming Dynasty," by CHING-HEAOU, A.D. 1522. —*Sŭh-wan-hëen tung-kaou*, "Supplement to the Antiquarian Researches," by WANG-KÉ, A.D. 1603.—*Sŭh-Hung këen-luh*, "Supplement to the History of the Middle Ages," by SHAOU-YUEN-PING, A.D. 1706. — *Ming-she*, "History of the Ming Dynasty," A.D. 1638—1643, by CHANG-TING-YŬH, A.D. 1739. — *Ta-tsing yih-tung*, "A Topographical Account of the Manchoo Dynasty," of which there is a copy in the British Museum.

[1] *Taou-e ché-lëŏ*, quoted in the *Hae-kwŏ-too che*, Foreign Geography, b. xviii. p. 15.

[2] *Leang-shoo*, b. liv. p. 10; *Nan-shè*, b. lxxviii. p. 13; *Tung-tëen*, b. clxxxviii. p. 17.

[3] The Chinese books repeat the popular belief that the hollow of the sacred footstep contains water "which

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by the first created man, who, in their mythology, bears the name of Pawn-koo; and the gems which are found upon the mountain they believe to be his "crystallised tears, which accounts for their singular lustre and marvellous tints."[1] The country they admired for its fertility and singular beauty; the climate they compared to that of Siam[2], with slight alterations of seasons; refreshing showers in every period of the year, and the earth consequently teeming with fertility.[3]

The names by which Ceylon was known to them were either adapted from the Singhalese, as nearly as the Chinese characters would supply equivalents for the Sanskrit and Pali letters, or else they are translations of the sense implied by each designation. Thus, Sinhala was either rendered "*Seng-kia-lo*,"[4] or "*Sze-tseu-kwŏ*," the latter name as well as the original, meaning "the kingdom of lions."[5] The classical Lanka is preserved in the Chinese "*Lang-kea*," and "*Lang-ya-seu*." In the epithet "*Chĭh-too*," the *Red Land*[6], we have a simple rendering of the Pali *Tambapanni*, the "Copper-palmed," from the colour of the soil.[7] *Paou-choo*[8] is a translation of the Sanskrit Ratna-dwipa, the "Island of Gems," and *Tsĭh-e-lan*, *Seĭh-lan*, and *Se-lung*, are all modern modifications of the European "Ceylon."

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does not dry up all the year round;" and that invalids recover by drinking from the well at the foot of the mountain, into which "the sea water enters free from salt." *Taou-e chĕ-lëŏ*, quoted in the *Hae-kwŏ-toŏ-ché*, or Foreign Geography, b. xxviii. p. 15.

[1] *Po-wŭh Yaou-lan*, b. xxxiii. p. 1. WANG-KE, *Sŭh-Wan-hëen tung-kaou*, b. ccxxxvi. p. 19.

[2] *Tung-tëen*, b. clxxxviii. p. 17. *Tae-ping*, b. dcclxxxvii. p. 5.

[3] *Leang-shoo*, b. liv. p. 10.

[4] *Hiouen-Thsang*, b. iv. p. 194. Transl. M. S. Julien.

[5] This, M. Stanislas Julien says, should be "the kingdom of *the lion*," in allusion to the mythical ancestry of Wijayo. — *Journ. Asiat.*, tom. xxix. p. 37. And in a note to the tenth book of HIOUEN-THSANG's *Voyages des Pélerins Bouddhistes*, vol. ii. p. 124, he says one name for Ceylon in Chinese is "Tchi-sse-tseu" "(le royaume de celui qui) a pris un lion."

[6] *Suy-shoo*, b. lxxx. p. 3. In the *Se-yih-ké foo-choo*, or "Descriptions of Western Countries," Ceylon is called *Woo-yew-kwŏ*, "the sorrowless kingdom."

[7] *Mahawanso*, ch. vii. p. 50.

[8] *Se-yih-ké foo-choo*, quoted in the *Haè-kwŏ-too che*, or "Foreign Geography," l. xviii. p. 15; HIOUEN-THSANG, *Voyages des Péler. Boudd.*, lib. xi. vol. ii. p. 125; 130 n.

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The ideas of the Chinese regarding the mythical period of Singhalese history, and the first peopling of the island, are embodied in a very few sentences which are repeated throughout the series of authors, and with which we are made familiar in the following passage from FĂ HIAN:—"Sze-tseu-kwŏ, the kingdom of lions[1], was inhabited originally not by men but by demons and dragons.[2] Merchants were attracted to the island, by the prospect of trade; but the demons remained unseen, merely exposing the precious articles which they wished to barter: with a price marked for each, at which the foreign traders were at liberty to take them, depositing the equivalents indicated in exchange. From the resort of these dealers, the inhabitants of other countries, hearing of the attractions of the island, resorted to it in large numbers, and thus eventually a great kingdom was formed."[3]

The Chinese were aware of two separate races, one occupying the northern and the other the southern extremity of the island, and were struck with the resemblance of the Tamils to the Hoo, a people of Central Asia, and of the Singhalese to the Leaou, a mountain tribe of Western China.[4] The latter they describe as having "large ears, long eyes, purple faces, black bodies, moist and strong hands and feet, and living to one hundred years and upwards.[5] Their hair was worn long and flowing, not only by the women but by the men." In these details there are particulars that

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[1] *Wan-hëen tung-kaou*, b. cccxxxviii. p. 24.

[2] The Yakkhos and Nagas ("devils" and "serpents") of the *Mahawanso*.

[3] *Foë-Kouë Ki*, ch. xxxviii. p. 333. Transl. RÉMUSAT. This account of Ceylon is repeated almost verbatim in the *Tung-tëen*, and in numerous other Chinese works, with the addition that the newly-formed kingdom of Sinhala, "Sze-tseu-kwŏ," took its name from the "skill of the natives in training lions."—B. cxciii. pp. 8, 9; *Tae-ping*, b. dccxciii. p. 9; *Sin-Tang-shoo*, b. cxlvi. part ii. p. 10. A very accurate translation of the passage as it is given by MA-TOUAN-LIN is published by M. Stanislas Julien in the *Journ. Asiat.* for July, 1836, tom. xxix. p. 36.

[4] *Too-Hiouen*, quoted in the *Tung-tëen*, b. cxciii. p. 8.

[5] *Taou-e ché-lëŏ*, quoted in the *Hae-kwŏ-too ché*, or "Foreign Geography," b. xviii. p. 15.

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closely resemble the description of the natives of the island visited by Jambulus, as related in the story told by Diodorus.[1]

The Chinese in the seventh century found the Singhalese dressed in a costume which appears to be nearly identical with that of the present day.[2] Both males and females had their hair long and flowing, but the heads of children were closely shaven, a practice which still partially prevails. The jackets of the girls were occasionally ornamented with gems.[3] "The men," says the *Tung-tëen*, "have the upper part of the body naked, but cover their limbs with a cloth, called *Kan-man*, made of *Koo-pei*, 'Cotton,' a word in which we may recognise the term 'Comboy,' used to designate the cotton cloth universally worn at the present day by the Singhalese of both sexes in the maritime provinces.[4] For their vests, the kings and nobles made use of a sub-

[1] Diodorus Siculus, lib. ii. ch. liii. See *ante*, Vol. I. P. v. ch. 1, p. 153.

[2] *Leang-shoo*, b. liv. p. 10; *Nan-shè*, b. lxxviii. pp. 13, 14.

[3] *Nan-shè*, A. D. 650, b. lxxviii. p. 13; *Leang-shoo*, A. D. 670, b. liv. p. 11. Such is still the dress of the Singhalese females.

A MOODLIAR AND HIS WIFE.

[4] *Tung-tëen*, b. clxxxviii. p. 17; *Nan-shè*, b. lxxviii. p. 13; *Sin-tang-shoo*, b. cxcviii. p. 25. See p. iv. ch. iv. vol. i. p. 450.

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stance which is described as 'cloud cloth,'[1] probably from its being very transparent, and gathered (as is still the costume of the chiefs of Kandy) into very large folds. It was fastened with golden cord. Men of rank were decorated with earrings. The dead were burned, not buried." And the following passage from the *Sŭh-wan-hëen-tung-kaou*, or the "Supplement to Antiquarian Researches," is strikingly descriptive of what may be constantly witnessed in Ceylon;—"the females who live near the family of the dead assemble in the house, beat their breasts with both hands, howl and weep, which constitutes their appropriate rite."[2]

The natural riches of Ceylon, and its productive capabilities, speedily impressed the Chinese, who were bent upon the discovery of outlets for their commerce, with the conviction of its importance as an emporium of trade. So remote was the age at which strangers frequented it, that in the "*Account of Island Foreigners*," written by WANG-TA-YUEN[3] in the fourteenth century, it is stated that the origin of trade in the island was coeval with the visit of Buddha, who, "taking compassion on the aborigines, who were poor and addicted to robbery, turned their disposition to virtue, by sprinkling the land with sweet dew, which caused it to produce red gems, and thus gave them wherewith to trade," and hence it became the resort of traders from every country.[4] Though aware of the unsuitability of the climate to ripen wheat, the Chinese were struck with admiration at the wonderful appliances of the Singhalese for irrigation, and the cultivation of rice.[5]

According to the *Tung-tëen*, the intercourse between

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[1] The Chinese term is "yun-hae-poo."—*Leang-shoo*, b. liv. p. 10.

[2] B. ccxxxvi. p. 19.

[3] *Taou-e ché-lëŏ*, quoted in the Foreign Geography, b. xviii. p. 15.

[4] The rapid peopling of Ceylon at a very remote age is accounted for in the following terms in a passage of MA-TWAN-LIN, as translated by M. Stanislas Julien;—"Les habitants des autres royaumes entendirent parler de ce pays fortuné; c'est pourquoi ils y accoururent à l'envi."—*Journ. Asiat.* t. xxix. p. 42.

[5] *Records of the Ming Dynasty*, by CHING-HEAOU, b. lxviii. p. 5.

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them and the Singhalese, began during the Eastern Tsin dynasty, A.D. 317—419[1]; and one remarkable island still retains a name which is commemorative of their presence. Salang, to the north of Penang, lay in the direct course of the Chinese junks on their way to and from Ceylon, through the Straits of Malacca, and, in addition to its harbour, was attractive from its valuable mines of tin. Here the Chinese fleets called on both voyages; and the fact of their resort is indicated by the popular name "Ajung-Selan," or "Junk-Ceylon;" by which the place is still known, *Ajung*, in the language of the Malays, being the term for "large shipping," and *Selan*, their name for Ceylon.[2]

The port in Ceylon which the Chinese vessels made their rendezvous, was Lo-le (Galle), "where," it is said, "ships anchor, and people land."[3]

Besides rice, the vegetable productions of the island enumerated by the various Chinese authorities were aloes-wood, sandal-wood[4], and ebony; camphor[5], areca-nuts, beans, sesamum, coco-nuts (and arrack distilled from the coco-nut palm) pepper, sugar-cane, myrrh, frankincense, oil and drugs.[6] An odoriferous extract, called by the Chinese *Shoo-heang*, is likewise particularised, but it is not possible now to identify it.

Elephants and ivory were in request; and the only manufactures alluded to for export were woven cotton[7], gold ornaments, and jewelry; including models of the shrines in which were deposited the sacred relics of

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[1] *Tung-tëen*, A.D. 740, b. clxxxviii. p. 17.

[2] *Sincapore Chronicle*, 1836.

[3] WANG-KE, *Süh-wan-hëen tung-kaou*, b. ccxxxvi. p. 19.

[4] The mention of sandal-wood is suggestive. It does not, so far as I could ever learn, exist in Ceylon; yet it is mentioned with particular care amongst its exports in the Chinese books. Can it be that, like the calamander, or Coromandel-wood, which is rapidly approaching extinction, sandal-wood was extirpated from the island by injudicious cutting, unaccompanied by any precautions for the reproduction of the tree?

[5] *Nan-shè*, b. lxxviii. p. 13.

[6] *Süh-Hung këen-lüh*, b. xlii. p. 52.

[7] *Tsih-foo yuen-kwei*, A.D. 1012, b. dccccl xxi. p. 15. At a later period "Western cloth" is mentioned among the exports of Ceylon,

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Buddha.[1] Statues of Buddha were frequently sent as royal presents, and so great was the fame of Ceylon for their production in the fourth and fifth centuries, that according to the historian of the Wei Tartar dynasty, A.D. 386 — 556, people "from the countries of Central Asia, and the kings of those nations, emulated each other in sending artisans to procure copies, but none could rival the productions of Nan-té.[2] On standing about ten paces distant they appeared truly brilliant, but the lineaments gradually disappeared on a nearer approach."[3]

Pearls, corals, and crystals were eagerly sought after; but of all articles the gems of Ceylon were in the greatest request. The business of collecting and selling them seems from the earliest time to have fallen into the hands of the Arabs, and hence they bore in China the designation of "Mahometan stones."[4] They consisted of rubies, sapphires, amethysts, carbuncles (the "red precious stone, the lustre of which serves instead of a lamp at night")[5]; and topazes of four distinct tints, "those the colour of wine; the delicate tint of young goslings, the deep amber, like bees'-wax, and the pale tinge resembling the opening bud of the pine."[6] It will not fail to be observed that throughout all these historical and topographical works of the Chinese, extending over a period of twelve centuries, from the year A.D. 487, there is no mention

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but the reference must be to cloth previously imported either from India or Persia.—*Ming-she History of the Ming Dynasty*, A.D. 1368—1643, b. cccxxvi. p. 7.

[1] A model of the shrine containing the sacred tooth was sent to the Emperor of China in the fifth century by the King of Ceylon; "*Chacha Mo-ho-nan*," a name which appears to coincide with Raja Maha Nama, who reigned A.D. 410—433.—*Shun-shoo*, A.D. 487, b. xlvii. p. 6.

[2] Nan-té was a Buddhist priest, who in the year A.D. 456 was sent on an embassy to the Emperor of China, and was made the bearer of three statues of his own making.—*Tsih-foo yuen-kwei*, b. li. p. 7.

[3] *Wei-shoo*, A.D. 590, b. cxiv. p. 9.

[4] *Tsih-ke*, quoted in the Chinese *Mirror of Sciences*, b. xxxiii. p. 1.

[5] *Po-wŭh yaou-lan*, b. xxxiii. p. 2.

[6] *Ibid.*

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whatever of *cinnamon* as a production of Ceylon; although cassia, described under the name of kwei, is mentioned as indigenous in China and Cochin-China. In exchange for these commodities the Chinese traders brought with them silk, variegated lute strings, blue porcelain, enamelled dishes and cups, and quantities of copper cash wanted for adjusting the balances of trade.[1]

Of the religion of the people, the earliest account recorded by the Chinese is that of FĂ HIAN, in the fourth century[2], when Buddhism was signally in the ascendant. But in the century which followed, travellers returning from Ceylon brought back accounts of the growing power of the Tamils, and of the consequent eclipse of the national worship. The *Yung-tëen* and the *Tae-ping* describe at that early period the prevalence of Brahmanical customs, but coupled with "greater reverence for the Buddhistical faith."[3] In process of time, however, they are forced to admit the gradual decline of the latter, and the attachment of the Singhalese kings to the Hindu ritual, exhibiting an equal reverence to the ox and to the images of Buddha.[4]

The Chinese trace to Ceylon the first foundation of monasteries, and of dwelling-houses for the priests, and in this they are corroborated by the *Mahawanso*.[5] From these pious communities, the Emperors of China were accustomed from time to time to solicit transcripts of theological works[6], and their envoys, returning from such missions, appear to have brought glowing accounts of the Singhalese temples, the costly shrines for

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1 *Suy-shoo,* "History of the Suy Dynasty," A.D. 633, b. lxxxi. p. 3.

2 *Foĕ-Kouĕ Ki,* ch. xxxviii.

3 *Tae-ping,* b. dccxciii. p. 9.

4 *Woo-hëŏ-pëen,* "Records of the Ming Dynasty," b. lxviii. p. 4; *Tung-che,* b. cxcvi. pp. 79, 80.

5 *Mahawanso,* ch. xv. p. 99; ch. xx. p. 123. In the Itinerary of KĔ-NĔĔ's *Travels in the Western Kingdoms in the tenth Century* he mentions having seen a monastery of Singhalese on the continent of India.—KĔ-NĔĔ, *Se-yih hing-ching,* A.D. 964—976.

6 *Tae-ping,* b. dcclxxxvii. p. 5.

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relics, and the fervid devotion of the people to the national worship."[1]

The cities of Ceylon in the sixth century are stated, in the "*History of the Leang Dynasty*," to have been encompassed by walls built of brick, with double gates, and the houses within were constructed with upper stories.[2] The palace of the king, at Anarajapoora, in the eleventh century, was sufficiently splendid to excite the admiration of these visitants, "the precious articles with which it was decorated being reflected in the thoroughfares."[3]

The Chinese authors, like the Greeks and Arabians, are warm in their praises of the patriotism of the Singhalese sovereigns, and their active exertions for the improvement of the country, and the prosperity of the people.[4] On state occasions, the king, "carried on an elephant, and accompanied by banners, streamers, and tom-toms, rode under a canopy[5], attended by a military guard."[6]

Throughout all the Chinese accounts, from the very earliest period, there are notices of the manners of the Singhalese, and even minute particulars of their domestic habits, which attest a continued intercourse and an intimate familiarity between the people of the two countries.[7] In this important feature the narratives of

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[1] *Taou-e ché-lëŏ.* "Account of Island Foreigners," quoted in the "*Foreign Geography*," b. xviii. p. 15. *Se-yih-ke foo-choo.* Ib. "At day-break every morning the people are summoned, and exhorted to repeat the passages of Buddha, in order to remove ignorance and open the minds of the multitude. Discourses are delivered upon the principles of vacancy (nirwana?) and abstraction from all material objects, in order that truth may be studied in solitude and silence, and the unfathomable point of principle attained free from the distracting influences of sound or smell."—*Tsih-foo yaen-kwei*, A. D. 1012, b. dccccLxi. p. 5.

[2] *Leang-shoo*, A. D. 630, b. liv. p. 11.

[3] *Tsih-foo yaen-kwei*, b. dccccLxi. p. 5.

[4] Ibid.

[5] The "chatta," or umbrella, emblematic of royalty.

[6] *Leang-shoo*, b. liv. p. 10.

[7] This is apparent from the fact that their statements are not confined to descriptions of the customs and character of the male Singhalese, but exhibit internal evidence that they had been introduced to their families, and had had opportunities of noting peculiarities in the customs of the females. They describe their dress, their mode of tying

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the Arabs, who, with the exception of the pilgrimage made with difficulty to Adam's Peak, appear to have known only the sea-coast and the mercantile communities established there, exhibit a marked difference when compared with those of the Chinese; as the latter, in addition to their trading operations in the south of the island, made their way into the interior, and penetrated to the cities in the northern districts. The explanation is to be found in the identity of the national worship attracting as it did the people of China to the sacred island, which had become the great metropolis of their common faith, and to the sympathy and hospitality with which the Singhalese welcomed the frequent visits of their distant co-religionists.

This interchange of courtesies was eagerly encouraged by the sovereigns of the two countries. The emperors of China were accustomed to send ambassadors, both laymen and theologians, to obtain images and relics of Buddha, and to collect transcripts of the sacred books, which contained the exposition of his doctrines[1]; — and the kings of Ceylon despatched embassies in return, authorised to reciprocate these religious sympathies and do homage to the imperial majesty of China.

The historical notices of the island by the Chinese relative to the period immediately preceding the fourteenth century, are meagre, and confined to a native tradition that "about 400 years after the establishment of the kingdom, the Great Dynasty fell into decay, when there was but one man of wisdom and virtue belonging to the royal house to whom the people became attached: the monarch thereupon caused him to be thrown into prison; but the lock opened of its own accord, and the king thus satisfied of his sacred character did not venture to take his life, but drove

their hair, their treatment of infants and children, the fact that the women as well as the men were addicted to chewing betel, and that they did not sit down to meals with their husbands, but "retired to some private apartments to eat their food."

[1] *Hiouen-Thsang*, Introd. STANISLAS JULIEN, p. 1.

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him into banishment to India (Tëen chuh), whence, after marrying a royal princess, he was recalled to Ceylon on the death of the tyrant, where he reigned twenty years, and was succeeded by his son, *Po-kea Ta-to*."[1] In this story may probably be traced the extinction of the "Great Dynasty" of Ceylon, on the demise of Maha-Sen, and the succession of the Sulu-wanse, or Lower Dynasty, in the person of Kitsiri Maiwan, A.D. 301, whose son, Detu Tissa, may possibly be the *Po-kea Ta-to* of the Chinese Chronicle.[2]

The visit of Fa Hian, the zealous Buddhist pilgrim, in the fourth century of our era, has been already frequently adverted to.[3] He landed in Ceylon A.D. 412, and remained for two years at Anarajapoora, engaged in transcribing the sacred books. Hence his descriptions are confined almost exclusively to the capital; and he appears to have seen little of the rest of the island. He dwells with delight on the magnificence of the Buddhist buildings, the richness of their jewelled statues, and the prodigious dimensions of the dagobas, one of which, from its altitude and solidity, was called the "*Mountain without fear*."[4] But what most excited his admiration was his finding no less than 5000 Buddhist priests at the capital, 2000 in a single monastery on a mountain (probably Mihintala), and between 50,000 and 60,000 dispersed throughout the rest of the island.[5] Pearls and gems were the wealth of Ceylon; and from the latter the king derived a royalty of three out of every ten discovered.[6]

The earliest embassy from Ceylon recorded in the Chinese[7] annals at the beginning of the fifth century,

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[1] *Leang-shoo*, "History of the Leang Dynasty," b. liv. p. 10.

[2] *Mahawanso*, c. xxxvii. p. 242. TURNOUR's *Epitome*, &c., p. 24.

[3] The *Foë-Kouë Ki*, or "Description of Buddhist Kingdoms," by FA-HIAN, has been translated by Rémusat and edited by Klaproth and Landresse, 4to. Paris, 1836.

[4] In Chinese, *Woo-wei*.

[5] *Foë-Kouë Ki*, c. xxxviii. pp. 333, 334.

[6] *Ibid.*, c. xxxvii. p. 328.

[7] A.D. 405. Gibbon alludes with natural surprise to his discovery of the fact, that prior to the reign of Justinian, the "monarch of China had actually received an embassy from

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appears to have proceeded overland by way of India, and was ten years before reaching the capital of China. It was the bearer of "a jade-stone image of Buddha, exhibiting every colour in purity and richness, in workmanship unique, and appearing to be beyond human art."[1]

During the same century there were four other embassies from Ceylon. One A.D. 428, when the King Cha-cha Mo-ho-nan (Raja Maha Naama) sent an address to the emperor, which will be found in the history of the Northern Sung dynasty[2], together with a "model of the shrine of the tooth," as a token of fidelity;—two in A.D. 430 and A.D. 435; and a fourth A.D. 456, when five priests, of whom one was Nanté, the celebrated sculptor, brought as a gift to the emperor a "three-fold image of Buddha."[3]

According to the Chinese annalists, the kings of Ceylon, in the sixth century, acknowledged themselves vassals of the Emperor of China, and in the year 515, on the occasion of Kumara Das raising the chatta, an envoy was despatched with tribute to China, together with an address, announcing the royal accession, in which the king intimates that he "had been desirous to go in person, but was deterred by fear of winds and waves."[4]

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the island of Ceylon."—*Decline and Fall*, c. xl.

[1] *Leang-shoo*, A.D. 630, b. liv. p. 13. The ultimate fate of this renowned work of art is related in the *Leang-shoo*, and several other of the Chinese chronicles. Throughout the Tsin and Sung dynasties it was preserved in the Wa-kwan monastery at Nankin, along with five other statues and three paintings which were esteemed chefs-d'œuvre. The jade stone image was at length destroyed in the time of Tung-hwan, of the Tse dynasty; first, the arm was broken off, and eventually the body taken to make hair-pins and armlets for the emperor's favourite consort Pwan. *Nân-shè*, b. lxxviii. p. 13. *Tung-tëen*, b. cxciii. p. 8. *Tae-ping*, &c., b. dcclxxxvii. p. 6.

[2] *Sung-shoo*, A.D. 487, b. xcvii. p. 5.

[3] Probably one in each of the three orthodox attitudes,—sitting in meditation, standing to preach, and reposing in "nirwana." *Wei-shoo*, "History of the Wei Tartar Dynasty," A.D. 590, b. cxiv. p. 9.

[4] *Leang-shoo*, b. liv. p. 10. *Yuh-hae*, "Ocean of Gems," A.D. 1338, b. clii. p. 33. The latter authority announces in like terms two other embassies with tribute to China, one in

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But although all these embassies are recorded in the Chinese chronicles as so many instances of acknowledged subjection, there is every reason to believe that the magniloquent terms in which they are described are by no means to be taken in a literal sense, and that the offerings enumerated were merely in recognition of the privilege of commercial intercourse subsisting between the two nations; but as the Chinese *literati* affect a lofty contempt for commerce, all allusion to trade is omitted; and beyond an incidental remark in some works of secondary importance, the literature of China observes a dignified silence on the subject.

Only one embassy is mentioned in the seventh century, when Dalu-piatissa despatched "a memorial and offerings of native productions;" [1] but there were four in the century following [2], after which there occurs an interval of above five hundred years, during which the Chinese writers are singularly silent regarding Ceylon; but the Singhalese historians incidentally mention that swords and musical instruments were then imported from China, for the use of the native forces, and that Chinese soldiers took service in the army of Prakrama III. A.D. 1266.[3]

In the thirteenth and fourteenth centuries, the only records of intercourse relate to the occasional despatch of public officers by the emperor of China to collect gems

A.D. 523, and another in the reign of Kirti Sena, A.D. 527. The *Tsih-foo yuen-kwei* mentions a similar mission in A.D. 531, b. dccccixviii. p. 20.

[1] A.D. 670. *Tsih-foo yuen-kwei*, b. dcccclxx. p. 16. It was in the early part of this century, during a period of intestine commotion, when the native princes were overawed by the Malabars, that *Hiouen-Thsang* met on the coast of India fugitives from Ceylon, from whom he derived his information as to the internal condition of the island, A.D. 629—633. See Transl. by Stanislas Julien, "*La Vie de Hiouen-Thsang*," Paris, 1853, pp. 192—198.

[2] A.D. 711, A.D. 746, A.D. 750, and A.D. 762. *Tsih-foo yuen-kwei*, b. dcccclxxi. p. 17. On the second occasion (A.D. 746) the king, who despatched the embassy, is described as sending as his envoy a "Brahman priest, the anointed graduate of the threefold repository, bearing as offerings head-ornaments of gold, precious neck-pendants, a copy of the great Prajna Sutra, and forty webs of fine cotton cloth."

[3] See the *Kawia-sakara*, written about A.D. 1410.

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and medical drugs, and on three successive occasions during the earlier part of the Yuen dynasty, envoys were empowered to negotiate the purchase of the sacred alms-dish of Buddha.[1]

The beginning of the fifteenth century, was, however, signalised by an occurrence, the details of which throw light over the internal condition of the island, at a period regarding which the native historians are more than usually obscure. At this time the glory of Buddhism had declined, and the political ascendency of the Tamils had enabled the Brahmans to taint the national worship by an infusion of Hindu observances. The *Se-yih-ke foo-choo*, or "Description of Western Countries," says that in 1405 A.D. the reigning king, A-lee-koo-nae-wurh (Wijaya-bahu VI.), a native of Sollee, and "an adherent of the heterodox faith, so far from honouring Buddha, tyrannised over his followers."[2] He maltreated strangers resorting to the island, and plundered their vessels, "so that the envoys from other lands, in passing to and fro, were much annoyed by him."[3]

In that year a mission from China, sent with incense

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[1] "In front of the image of Buddha there is a sacred bowl which is neither made of jade, nor copper, nor iron; it is of a purple colour and glossy, and when struck it sounds like glass. At the commencement of the Yuen dynasty, three separate envoys were sent to obtain it."—*Taou-e che-lëŏ*, "Account of Island Foreigners," A.D. 1350, quoted in the "*Foreign Geography*," b. xviii. p.15. This statement of the Chinese authorities corroborates the story told by Marco Polo, possibly from personal knowledge, that "the Grand Khan Kublai sent ambassadors to Ceylon with a request that the king would yield to him possession of "the great ruby" in return for the "value of a city."—(*Travels*, ch. xix.) The MS. of Marco Polo, which contains the Latin version of his Travels, is deposited in the Imperial Library of Paris, and it is remarkable that a passage in it, which seems to be wanting in the Italian and other MSS., confirms this account of the Chinese annalists, and states that the alms-dish of Buddha was at length yielded by the King of Ceylon as a gift to Kublai Khan, and carried with signal honour to China. Marco Polo describes the scene as something within his own knowledge:—"Quando autem magnus Kaan scivit quod isti ambaxiatores redibant cum reliquis istis, et erant prope terram ubi ipse tun cerat, scilicet in Cambalu (Pekin), fecit mitti bandum quod omnes de terra obviarent reliquis istis (quia credebat quod essent reliquiæ de Adam) et istud fuit A.D. 1284."

[2] B. xviii. p. 15.

[3] *Ming-she*, b. cccxxvi. p. 7.

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and offerings to the shrine of the tooth, was insulted and waylaid, and with difficulty effected an escape from Ceylon.[1] According to the *Ming-she*, or History of the Ming Dynasty, "the Emperor *Ching-tsoo*, indignant at this outrage on his people; and apprehensive lest the influence of China in other countries besides Ceylon had declined during the reign of his predecessors, sent *Ching-Ho*, a soldier of distinction with a fleet of sixty-two ships and a large military escort, on an expedition to visit the western kingdoms, furnished with proper credentials and rich presents of silks and gold. Ching-Ho touched at Cochin-China, Sumatra, Java, Cambodia, Siam, and other places, "proclaiming at each the Imperial edict, and conferring Imperial gifts." If any of the princes refused submission, they were subdued by force; and the expedition returned to China in A.D. 1407, accompanied by envoys from the several nations, who came to pay court to the Emperor.

In the following year Ching-Ho, having been despatched on a similar mission, the king, A-lee-ko-nae-wurh, decoyed his party into the interior, threw up stockades with a view to their capture, in the hope of a ransom, and ordered soldiers to the coast to plunder the Chinese junks. But Ching-Ho, by a dexterous movement, avoided the attack, and invested the capital[2], made a prisoner of the king, succeeded in conveying him on board his fleet, and carried him captive to China, together with his queen, his children, his officers of state, and his attendants. He brought away with him spoils, which were long afterwards exhibited in the Tsing-hae monastery at Nankin[3], and one of the commentaries on the *Si-yu-ke* of Hiouen Thseng, states that amongst the articles carried away, was the sacred tooth of

[1] *Se-yih-ke foo-choo*, b. xviii. p. 15. This Chinese invasion of Ceylon has been already adverted to in the sketch of the domestic history of the island, Vol. I. Part IV. ch. xii. p. 417.

[2] Gampola.

[3] *Süh-Wan-hëen tung-kaou*, book ccxxxvi. p. 12.

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Buddha.[1] "In the sixth month of the year 1411," says the author of the *Ming-Shè*, "the prisoners were presented at court. The Chinese ministers pressed for their execution, but the emperor, in pity for their ignorance, set them at liberty, but commanded them to select a virtuous man from the same family to occupy the throne. All the captives declared in favour of Seay-pa-nae-na, whereupon an envoy was sent with a seal to invest him with the royal dignity, as a vassal of the empire," and in that capacity he was restored to Ceylon, the former king being at the same time sent back to the island.[2] It would be difficult to identify the names in this story with the kings of the period, were it not stated in another chronicle, the *Woo-hëŏ-pëen*, or Record of the Ming Dynasty, that Seay-pa-nae-na was afterwards named *Pu-la-ko-ma Ba-zae La-cha*, in which it is not difficult to recognise "Sri Prakrama Bahu Raja," the sixth of his name, who transferred the seat of government from Gampola to Cotta, and reigned from A.D. 1410 to 1462.[3]

For fifty years after this untoward event the subjection of Ceylon to China appears to have been

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[1] See note at the end of this chapter.

[2] *Ming-shè*, b. cccxxvi. p. 5. M. STANISLAS JULIEN intimates that the forthcoming volume of his version of the *Si-yu-ki* will contain the eleventh book, in which an account will be given of the expedition of Ching Ho. — *Mémoires sur les Contrées Occidentales*, tom. i. p. 26. In anticipation of its publication, M. JULIEN has been so obliging as to make for me a translation of the passage regarding Ceylon, but it proves to be an annotation of the fifteenth century, which, by the inadvertence of transcribers, has become interpolated in the text of *Hiouen-Thsang*. It contains, however, no additional facts or statements beyond the questionable one before alluded to, that the sacred tooth of Buddha was amongst the spoils carried to Pekin by Ching Ho.

[3] *Woo-hëŏ-pëen*, b. lxviii. p. 5. See also the *Ta-tsing yih-tung*, a topographical account of the Manchoo empire, a copy of which is among the Chinese books in the British Museum. In the very imperfect version of the *Rajavali*, published by Upham, this important passage is rendered unintelligible by the want of fidelity of the translator, who has transformed the conqueror into a "Malabar," and ante-dated the event by a century. (*Rajavali*, p. 263.) I am indebted to Mr. De Alwis, of Colombo, for a correct translation of the original, which is as follows: "In the reign of King Wijayo-bahu, the King of Maha (great) China landed in Ceylon with an army, pretending that he was bringing tribute; King Wijayo-

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humbly and periodically acknowledged; tribute was punctually paid to the emperor, and on two occasions, in 1416 A.D., and 1421 A.D., the kings of Ceylon were the bearers of it in person.[1] In 1430 A.D., at a period of intestine commotion, "Ching-Ho issued a proclamation for the pacification of Ceylon," and, at a somewhat later period, edicts were promulgated by the Emperor of China for the government of the island.[2] In 1459 A.D., however, the series of humiliations appears to have come abruptly to a close; for, "in that year," says the *Ming-shè*, "the King of Ceylon for the last time sent an envoy with tribute, and after that none ever came again."

On their arrival in Ceylon early in the sixteenth century,[3], the Portuguese found many evidences still existing of the intercourse and influence of the Chinese. They learned that at a former period they had established themselves in the south of the island; and both De Barros and De Couto ventured to state that the Singhalese were so called from the intermarriage of the Chinese with the Gallas or Chalias, the caste who in great numbers still inhabit the country to the north of Point de Galle.[4] But the conjecture is erroneous, the derivation of Singhala is clearly traced to the Sanskrit

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bahu, believing his professions (because it had been customary in the time of King Prakrama-bahu for foreign countries to pay tribute to Ceylon), acted incautiously, and he was treacherously taken prisoner by the foreign king. His four brothers were killed, and with them fell many people, and the king himself was carried captive to China." DE COUTO, in his continuation of DE BARROS, has introduced the story of the capture of the king by the Chinese; but he has confounded the dates, mystified the facts, and altered the name of the new sovereign to Pandar, which is probably only a corruption of the Singhalese *Banda*, "a prince." —DE COUTO, *Asia, &c.*, dec. v. lib. i. c. vi. vol. ii. part i. p. 51. PURCHAS says: "The Singhalese language is thought to have been left there by the Chinois, some time Lord of Zeilan." — *Pilgrimage*, c. xviii. p. 552. The adventures of Ching Ho, in his embassy to the nations of the Southern Ocean, have been made the ground-work of a novel, the *Se-yung-ke*, which contains an enlarged account of his exploits in Ceylon; but fact is so overlaid with fiction that the passages are not worth extracting.

[1] *Ming-shè*, b. vii. pp. 4, 8.

[2] *Ibid.*, b. cccxxvii. p. 7.

[3] A.D. 1505.

[4] "Serem os Chijis senhores da costa Choromandel, parte do Malabar

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"*Singha;*" besides which, in the alphabet of the Singhalese, *n* and *g* combine to form a single and insoluble letter.

In process of time, every trace disappeared of the former presence of the Chinese in Ceylon — embassies ceased to arrive from the "Flowery Kingdom," Chinese vessels deserted the harbours of the island, pilgrims no longer repaired to the shrines of Buddha; and even the inscriptions became obliterated in which the imperial offerings to the temples were recorded on the rocks.[1] The only mementos which remain at the present day to recall their ancient domestication in the island, is the occasional appearance in the mountain villages of an itinerant vender of sweetmeats, or a hut in the solitary forest near some cave, from which an impoverished Chinese renter annually gathers the edible nests of the swallow.

NOTE.

As it may be interesting to learn the opinions of the Chinese at the present day regarding Ceylon, the following account of the island has been translated for me by Dr. Lockhart, of Shanghae, from a popular work on geography, written by the late lieutenant-governor of the province of Fokhien, assisted by

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e desta Ilha Ceilão. Na qual Ilha leixáram huma lingua, a que elles chamam Chingálla, e aos proprios póvos Chingallas, principalmente os que vivem da ponta de Gálle por diante na face da terra contra o Sul, e Oriente: e por ser pegada neste Cabo Gálle, chamou á outra gente, que vivia do meio da ilha pera cima, aos que aqui habitavam *Chingalla* e á lingua delles tambem, *quasi como se dissessem lingua ou gente dos Chijo de Galle.*"—DE BARROS, *Asia*, *&c.*, Dec. iii. lib. ii. c. i. DE COUTO's account is as follows: "E como os Chins formam os primeiros que navegáram pelo Oriente, tendo noticia da canella, acudíram muitos 'juncos' aquella Ilha a carregar della, e dalli a levaram aos portos de Persia, e da Arabia donde passou á Europa—de que se deixaram ficar muitos Chins na terra, e se misturáram por casamentos com os naturaes; *dantre quem nascêram huns mistços que se ficaram chamando Cim-Gallás; ajuntando o nome dos naturaes, que eram Gallas aos dos Chins*, que vieram por tempos a ser tão famosos, que deram o seu nome a todos os da Ilha."—*Asia*, *&c.*, Dec. v. lib. ch. v.

[1] *Sĕŭh-Wan-këen tung-kaou*, book ccxxxvi. p. 12.

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some foreigners. The book is called Ying-hwăn-che-ke, or "The General Account of the Encircling Ocean."

"Seïh-lan is situated in Southern India, and is a large island in the sea, on the south-east coast, its circumference being about 1000 le (300 miles), having in the centre lofty mountains; on the coast the land is low and marshy. The country is characterised by much rain and constant thunder. The hills and valleys are beautifully ornamented with flowers and trees of great variety and beauty, the cries of the animals rejoicing together fill the air with gladness, and the landscape abounds with splendour. In the forests are many elephants, and the natives use them instead of draught oxen or horses. The people are all of the Buddhistic religion; it is said that Buddha was born here: he was born with an excessive number of teeth. The grain is not sufficient for the inhabitants, and they depend for food on the various districts of India. Gems are found in the hills, and pearls on the sea coast; the cinnamon that is produced in the country is excellent, and much superior to that of Kwang-se. In the middle of the Ming dynasty, the Portuguese seized upon Seïh-lan and established marts on the sea coast, which by schemes the Hollanders took from them. In the first year of Kia-King (1795), the English drove out the Hollanders, and took possession of the sea coast. At this time the people of Seïh-lan, on account of their various calamities or invasions, lost heart. Their city on the coast, called Colombo, was attacked by the English, and the inhabitants were dispersed or driven away; then the whole island fell into the hands of the English, who eventually subjected it. The harbour for rendezvous on the coast is called Ting-ko-ma-lé."

To this the Chinese commentator adds, on the authority of a work, from which he quotes, entitled, "A Treatise on the Diseases of all the Kingdoms of the Earth:" —

"The Kingdom of Seïh-lan was anciently called Lang-ya-sew; the passage from Soo-mun-ta-che (Sumatra), with a favourable wind, is twelve days and nights; the country is extensive, and the people numerous, and the products abundant, but inferior to Kiva-wa (Java). In the centre are lofty mountains, which yield the A-kŭh (crow and pigeon) gems; after every storm of rain they are washed down from the hills, and gathered among the sand. From Chang-tsun, Lin-yih in the extreme west, can be seen. In the foreign language,

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the high mountain is called Seĭh-lan; hence the name of the island. It is said Buddha (Shĭh-ka) came from the island of Ka-lon (the gardens of Buddha), and ascended this mountain, on which remains the trace of his foot. Below the hill there is a monastery, in which they preserve the nēe-pwan (a Buddhistic phrase, signifying the world; literally rendered, his defiling or defiled vessel) and the Shay-le-tsze, or relics of Buddha.

"In the sixth year of his reign (1407), Yung-lŏ, of the Ming dynasty, sent an ambassador extraordinary, Ching-Ho and others, to transmit the Imperial mandate to the King A-lēe-jŏ-nai-wah, ordering him to present numerous and valuable offerings and banners to the monastery, and to erect a stone tablet, and rewarding him by his appointment as tribute bearer; A-lēe-jŏ-nai-wurh ungratefully refusing to comply, they seized him, in order to bring him to terms, and chose from among his nearest of kin A-pa-nae-na, and set him on the throne. For fourteen years, Tēen-ching, Kwa-wa (Java), Mwan-che-kea, Soo-mun-ta-che (Sumatra), and other countries, sent tribute in the tenth year of Chin-tung, and the third year of Teen-shun they again sent tribute."[1]

"I have heard from an American, A-pe-le[2], that Seĭh-lan was the original country of Teen-chuh (India), and that which is now called Woo-yin-too was Teen-chŭh, but in the course of time the names have become confused. According to the records of the later Han dynasty, Teen-chŭh was considered the Shin-tŭh, and that the name is not that of an island, but of the whole country. I do not know what proof there is for A-pe-le's statement."

[1] There is here some confusion in the chronology, as Teen-shun reigned before Ching-tung.

[2] Mr. Abeel, an American missionary.

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CHAP. IV.

CEYLON AS KNOWN TO THE MOORS, GENOESE, AND VENETIANS.

The rapid survey of the commerce of India during the middle ages, which it has been necessary to introduce into the preceding narrative, will also serve to throw light on a subject hitherto but imperfectly investigated.

The most remarkable of the many tribes which inhabit Ceylon are the Mahometans, or, as they are generally called on the island, the "Moor-men," energetic and industrious communities of whom are found on all parts of the coast, but whose origin, adventures, and arrival are amongst the historical mysteries of Ceylon.

The meaningless designation of "Moors," applied to them, is the generic term by which it was customary at one time, in Europe, to describe a Mahometan, from whatsoever country he came, as the word Gentoo[1] was formerly applied in England to the inhabitants of Hindustan, without distinction of race. The practice probably originated from the Spaniards having given that name to the followers of the Prophet, who, after traversing Morocco, overran the peninsula in the seventh and eighth centuries.[2] The epithet was borrowed by the Portuguese, who, after their discovery

[1] The practice originated with the Portuguese, who applied to any unconverted native of India the term *gentio*, "idolater" or "barbarian."

[2] The Spanish word "*Moro*" and the Portuguese "*Mouro*" may be traced either to the "Mauri," the ancient people of Mauritania, now Morocco, or to the modern name of "Moghrib," by which the inhabitants, the Moghribins, designate their country.

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of the passage by the Cape of Good Hope, bestowed it indiscriminately upon the Arabs and their descendants, whom, in the sixteenth century, they found established as traders in every port on the Asian and African coast, and whom they had good reason to regard as their most formidable competitors for the commerce of the East.

Particular events have been assumed as marking the probable date of their first appearance in Ceylon. Sir Alexander Johnston, on the authority of a tradition current amongst their descendants, says, that "the first Mahometans who settled there were driven from Arabia in the early part of the eighth century, and established themselves at Jaffna, Manaar, Koodramali, Putlam, Colombo, Barberyn, Point de Galle, and Trincomalie."[1] The Dutch authorities, on the other hand, hold that the Moors were Moslemin only by profession, that by birth they were descendants of a mean and detestable Malabar caste, who in remote times had been converted to Islam through intercourse with the Arabs of Bassora and the Red Sea; that they had frequented the coasts of India as seamen, and then infested them as pirates; and that their first appearance in Ceylon was not earlier than the century preceding the landing of the Portuguese.[2]

The truth, however, is, that there were Arabs in Ceylon ages before the earliest date named in these

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[1] *Trans. Roy. Asiat. Society,* 1827 A.D. vol. i. 538. The Moors, who were the informants of Sir Alexander Johnston, probably spoke on the equivocal authority of the *Tohfut-ul-mujahideen,* which is generally, but erroneously, described as a narrative of the settlement of the Mahometans in Malabar. Its second chapter gives an account of "the manner in which the Mahometan religion was first propagated" there; and states that its earliest apostles were a Sheikh and his companions, who touched at Cranganore about 822 A.D., when on their journey as pilgrims to the sacred foot-print on Adam's Peak. (ROWLANDSON, *Orient. Transl. Fund.,* pp. 47. 55.) But the introduction of the new faith into this part of India was subsequent to the arrival of the Arabs themselves, who had long before formed establishments at numerous places on the coast.

[2] VALENTYN, ch. xv. p. 214.

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conjectures[1]; they were known there as traders centuries before Mahomet was born, and such was their passion for enterprise, that at one and the same moment they were pursuing commerce in the Indian Ocean[2], and manning the galleys of Marc Antony in the fatal sea-fight at Actium.[3] The author of the *Periplus* found them in Ceylon about the first Christian century, Cosmas Indico-pleustes in the sixth; and they had become so numerous in China in the eighth, as to cause a tumult at Canton.[4] From the tenth till the fifteenth century, the Arabs, as merchants, were the undisputed masters of the East; they formed commercial establishments in every country that had productions to export, and their vessels sailed between every sea-port from Sofala to Bab-el-Mandeb, and from Aden to Sumatra.[5] The "Moors," who at the present day inhabit the coasts of Ceylon, are the descendants of these active adventurers; they are not purely Arabs in blood, but descendants from Arabian ancestors by intermarriage with the native races who embraced the religion of the Prophet.[6]

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[1] MOUNTSTUART ELPHINSTONE, on the authority of Agatharchides (as quoted by Diodorus and Photius), says, that "from all that appears in that author, we should conclude that two centuries before the Christian era, the trade (between India and the ports of Sabæa) was entirely in the hands of the Arabs."—*Hist. India*, b. iii. c. x. p. 167.

[2] Pliny, b. vi. c. 22.

[3] "Omnis eo terrore Ægyptus et Indi
Omnes Arabes vertebant terga Sabæi."
VIRGIL, *Æn.* viii. 705.

[4] ABOU-ZEYD, vol. i. pp. xlii. cix.

[5] VINCENT, vol. ii. p. 451. The Moors of Ceylon are identical in race with "the Mopillees of the Malabar coast."—M'KENZIE, *Asiat. Res.*, vol. vi. p. 430.

[6] In a former work, "*Christianity in Ceylon*," I was led, by incorrect information, to describe a section of the Moors as belonging to the sect of the Shiahs, and using the Persian language in the service of their mosques (c. i. note, p. 34). There is reason to believe that at a former period there were Mahometans in Ceylon to whom this description would apply; but at the present day the Moors throughout the island are, I believe, universally Sonnees, belonging to one of the four orthodox sects called *Shafees*, and using Arabic as their ritual dialect. Their vernacular is Tamil, mixed with a number of Arabic words; and all their religious books, except the Koran, are in that dialect. Casie Chitty, the erudite District Judge of Chilaw, writes to me that "the Moors of Ceylon believe themselves to be of the posterity of Hashem; and, according to one tradition, their progenitors were driven from Arabia by Mahomet himself, as a punishment for their cowardice at the battle of Ohod. But according to another version, they fled from the tyranny of the Khalif Abu al Melek

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The Singhalese epithet of "*Marak-kala-minisu*" or "Mariners," describes at once their origin and occupation; but during the middle ages, when Ceylon was the Tyre of Asia, these immigrant traders became traders in all the products of the island, and the brokers through whose hands they passed in exchange for the wares of foreign countries. At no period were they either manufacturers or producers in any department; their genius was purely commercial, and their attention was exclusively devoted to buying and selling what had been previously produced by the industry and ingenuity of others. They were dealers in jewellery, connoisseurs in gems, and collectors of pearls; and whilst the contented and apathetic Singhalese in the villages and forests of the interior passed their lives in the cultivation of their rice-lands, and sought no other excitement than the pomp and ceremonial of their temples; the busy and ambitious Mahometans on the coast built their warehouses at the ports, crowded the harbours with their shipping, and collected the wealth and luxuries of the island, its precious stones, its dye-woods, its spices and ivory, to be forwarded to China and the Persian Gulf.

Marco Polo, in the thirteenth century, found the Moors in uncontested possession of this busy and lucrative trade, and Barbosa, in his account of the island, A.D. 1519, says, that not only were they to be found in every sea-port and city, conducting and monopolising its commerce, but Moors from the coast of Malabar were continually arriving to swell their numbers, allured by the facilities of commerce and the unrestrained freedom en-

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ben Merivan, in the early part of the eighth century. Their first settlement in India was formed at Kailpatam, to the east of Cape Comorin, whence that place is still regarded as the 'father-land of the Moors.'"

Another of their traditions is, that their first landing-place in Ceylon was at Barberyn, south of Caltura, in the 402nd year of the Hejira, (A.D. 1024). These legends would seem to refer to the arrival of some important section of the Moors, but not to the first appearance of this remarkable people in Ceylon. The *Ceylon Gazetteer*, Cotta, 1834, p. 254, contains a valuable paper by Casie Chitty on "the Manners and Customs of the Moors of Ceylon."

joyed under the government.[1] In process of time their prosperity invested them with political influence, and in the decline of the Singhalese monarchy they took advantage of the feebleness of the king of Cotta, to direct armed expeditions against parts of the coast, to plunder the inhabitants, and supply themselves with elephants and pearls.[2] They engaged in conspiracies against the native princes; and Wijayo Bahu VII., who was murdered in 1534, was slain by a turbulent Moorish leader called Soleyman, whom his eldest son and successor had instigated to the crime.[3]

The appearance of the Portuguese in Ceylon at this critical period, served not only to check the career of the Moors, but to extinguish the independence of the native princes; and looking to the facility with which the former had previously superseded the Malabars, and were fast acquiring an ascendency over the Singhalese chiefs, it is not an unreasonable conjecture that, but for this timely appearance of a Christian power in the island, Ceylon, instead of a possession of the British crown, might at the present day have been a Mahometan kingdom, under the rule of some Arabian adventurer.

But although the position of the Arabs in relation to the commerce of the East underwent no unfavourable change prior to the arrival of the Portuguese in the Indian seas, numerous circumstances combined in the early part of the sixteenth century to bring other European nations into communication with the East.

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[1] "Molti Mori Malabari vengono à stantiare in questa isola per esser in grandissima libertà, oltra tutte le commodita e delitie del mondo," etc. —Odoardo Barbosa, *Sommario delle Indie Orientale*, in *Ramusio*, vol. i. p. 313.

[2] *Rajavali*, p. 274.

[3] *Ib.*, p. 284. Porcacchi, in his *Isolario*, written at Venice A.D. 1576, thus records the traditional reputation of the Moors of Ceylon:—"I Mori ch' habitano hoggi la Taprobana fanno grandissimi trafichi, nauigando per tutto: et piu anchora vengono da diverse parte molte mercantie, massimamente dal paese di Cambaia, con coralli, cinabrio, et argento vivo. Ma son questi Mori perfidi et ammazzono spesse, volte i lor Re; et ne creano degli altri."—Page 188.

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The productions of India, whether they passed by the Oxus to the Caspian, or were transported in caravans from the Tigris to the shores of the Black Sea, were poured into the magazines of Constantinople, the merchants of which, previous to the fall of the Lower Empire, were the most opulent in the world. During the same period, Egypt commanded the trade of the Red Sea; and received, through Aden, the luxuries of the far East, with which she supplied the Moorish princes of Spain, and the countries bordering on the Mediterranean.[1]

Even when the dominion of the Khalifs was threatened by the rising power of the Turks, and long after the subsidence of the commotions and vicissitudes which marked the period of the Crusades, part of this lucrative commerce was still carried to Alexandria, by the Nile and its canals. The Genoese and Venetians, each eager to engross the supply of Europe, sought permission from the Emperors to form establishments on the shores of the Black Sea and the Mediterranean. The former advanced their fortified factories as far eastward as Tabriz, to meet the caravans returning from the Persian Gulf[2], and the latter, in addition to the formation of settlements at Tyre, Beyrout, and Acre[3], acquired after the fourth crusade, succeeded (in defiance of the interdict of the Popes against trading with the infidel) in negotiating a treaty with the Mamelukes for a share in the trade of Alexandria.[4] It was through Venice that England and the western na-

[1] Odoardo Barbosa, in Ramusio, vol. i. p. 292. Baldelli Boni, *Relazione dell' Europa e dell' Asia*, lib. ix. ch. xlvii. Faria y Sousa, *Portug. Asia*, part i. ch. viii.

[2] Gibbon, *Decl. and Fall*, ch. lxiii.

[3] Daru, *Hist. de Venise*, lib. xix. vol. iv. p. 74. Macpherson's *Annals of Commerce*, vol. i. p. 370.

[4] So impatient were the Venetians to grasp the trade of Alexandria that Marino Sanuto, about the year 1321 A.D., endeavoured to excite a new crusade in order to wrest it from the Sultan of Egypt by force of arms. *Secreta Fidelium Crucis*, in Bongars, *Gesta Dei per Francos*, Hanau, 1611. Adam Smith, *Wealth of Nations*, b. iv. ch. vii. Daru, *Hist. de Venise*, lib. xix. vol. iv. p. 88.

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tions obtained the delicacies of India and China, down to the period when the overland route and the Red Sea were deserted for the grander passage by the Cape of Good Hope.[1]

Another great event which stimulated the commercial activity of the Italians in the thirteenth and fourteenth centuries, was the extraordinary progress of the Mongols, who in an incredibly short space of time absorbed Central Asia into one powerful empire, overthrew the ancient monarchy of China, penetrated to the heart of Russia, and directed their arms with equal success both against Poland and Japan. The popes and the sovereigns of Europe, alike alarmed for their dominions and their faith, despatched ambassadors to the Great Khan; the mission resulted in allaying apprehension for the further advance of their formidable neighbours towards the west, and the vigilant merchants of Venice addressed themselves to effect an opening for trade in the new domains of the Tartar princes.

It is to this commercial enterprise that we are indebted for the first authentic information regarding China and India, that reached Europe after the silence of the middle ages; and the voyages of the Venetians, in some of which the realities of travel appear as extraordinary as the incidents of romance, contain accounts of Ceylon equally interesting and reliable.

MARCO POLO, who left Venice as a youth in the year 1271, and resided seventeen years at the court of Kubla Khan, was the first European who penetrated to China Proper; whence he embarked in A.D. 1291, at Fo-Kien, and passing through the Straits of Malacca, rested at Ceylon, on his homeward route by Ormuz.

He does not name the port in Ceylon at which he

[1] GIBBON, *Decl. and Fall*, ch. lx. The last of the Venetian "argosies" which reached the shores of England was cast away on the Isle of Wight, A.D. 1587.

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landed, but he calls the king *Sender-naz*, a name which may possibly be identified with the Malay Chandra-banu, who twice invaded the island during the reign of Pandita Prakrama-bahu III.[1]

He repeats the former exaggerated account as to the dimensions of Ceylon; he says that it was believed to have been anciently larger still, and he shows incidentally that as early as the thirteenth century, the Arab sailors possessed charts of the island which they used in navigating the Indian seas.[2] Then, as now, the universal costume of the Singhalese was the cotton "comboy," worn only on the lower half of the body[3], their grains were sesamum and rice; their food the latter with milk and flesh-meat; and their drink coco-nut toddy, which Marco calls "wine drawn from the trees." He dwells with rapture on the gems and costly stones, and, above all, on the great ruby, a span long, for which Kubla Khan offered the value of a city. With singular truth he says, "the people are averse to a military life, abject and timid, and when they have occasion to employ soldiers, they procure them from other countries in the vicinity of the Mahometans." From this it would seem that six hundred years ago, it was the practice in Ceylon, as it is at the present day, to recruit the forces of the island from the Malays.

The next Venetian whose travels qualified him to speak of Ceylon was the Minorite friar Odoric, of Portenau in Friuli[4], who, setting out from the Black Sea in 1318, traversed the Asian continent to China, and returned to Italy after a journey of twelve years. In Ceylon he was struck by the number of serpents,

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[1] Pandita Prakrama Bahoo III. was also called Kalikalla Saahitya Sargwajnya. — Turnour's *Epitome*, p. 44.

[2] I have seen with the sailors of the Maldives, who resort to Ceylon at the present day, charts evidently copied from very ancient originals.

[3] See the drawing, page 612.

[4] *Itinerarium* Fratris Odorici de Foro Julii de Portu-Vahonis.

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and the multitude of wild animals, lions (leopards?), bears, and elephants. "In it he saw the mountain on which Adam for the space of 500 years mourned the death of Abel, and on which his tears and those of Eve formed, as men believed, a fountain;" but this Odoric discovered to be a delusion, as he saw the spring gushing from the earth, and its waters "flowing over jewels, but abounding with leeches and blood-suckers." The natives were permitted by the king to collect the gems; and in doing so they smear their bodies with the juice of lemons to protect them from the leeches. The wild creatures, they said, however dangerous to the inhabitants of the island, were harmless to strangers. In that island Odoric saw "birds with two heads," which possibly implies that he saw the hornbill[1], whose huge and double casque may explain the expression.

In the succeeding century[2] the most authentic account of Ceylon is given by NICOLÒ DI CONTI, another Venetian, who, though of noble family, had settled as a

[1] *Buceros Pica.* See *ante*, Part II. ch. ii. p. 167.

[2] Among the writers on India in the 14th century, A.D. 1323, was the Dominican missionary JOURDAIN CATALANI, or "Jordan de Severac," regarding whose title of *Bishop of Colombo*, "Episcopus Columbensis," it is somewhat uncertain whether his see was in Ceylon, or at Coulam (Quilon), on the Malabar coast. The probability in favour of the latter is sustained by the fact of the very limited accounts of the island contained in his *Mirabilia*, a work in which he has recorded his observations on the Dekkan. *Cinnamon he describes as a production of Malabar*, and Ceylon he extols only for its gems, pre-eminent among which were two rubies, one worn by the king, suspended round his neck, and the other which, when grasped in the hand, could not be covered by the fingers, "Non credo mundum habere universum tales duo lapides, nec tanti pretii." The MS. of Fra. JORDANUS's *Mirabilia* has been printed in the *Recueil des Voyages* of the Société Géogr. of Paris, vol. i. p. 49. GIOVANNI DE MARIGNOLA, a Florentine and Legate of Clement VI., landed in Ceylon in 1349 A.D., at which time the legitimate king was driven away and the supreme power left in the hands of a eunuch whom he calls *Coja-Joan*, "pessimus Saracenus." The legate's attention was chiefly directed to "the mountain opposite Paradise."— DOBNER, *Monum. Histor. Boemiæ.* Pragæ, 1764-85.

JOHN OF HESSE in his "Itinerary" (in which occurs the date A.D. 1398) says, "Adsunt et in quâdam insulâ nomine Taprobanes viri crudelissimi et moribus asperi: permagnas habent aures, et illas plurimis gemmis ornare dicuntur. *Hi carnes humanas pro summis deliciis comedunt.*"— JOHANNIS DE HESSE, Presbyteri *Itinerarium*, etc.

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merchant at Damascus, whence he had travelled over Persia, India, the Eastern Archipelago, and China. Returning by way of Arabia and the Red Sea, in 1444, he fell into danger amongst some fanatical Mahometans, and was compelled to renounce the faith of a Christian, less from regard for his own safety than apprehension for that of his children and wife. For this apostacy he besought the pardon of Pope Eugenius IV., who absolved him from guilt on condition that he should recount his adventures to the apostolic secretary, Poggio Bracciolini, by whom they have been preserved in his dissertation on "*The Vicissitudes of Fortune.*"[1]

Di Conti is, I believe, the first European who speaks of cinnamon as a production of Ceylon. "It is a tree," he says, "which grows there in abundance, and which very much resembles our thick willows, excepting that the branches do not grow upwards, but spread horizontally; the leaves are like those of the laurel, but somewhat larger; the bark of the branches is thinnest and best, that of the trunk thick and inferior in flavour. The fruit resembles the berries of the laurel; the Indians extract from it an odoriferous oil, and the wood, after the bark has been stripped from it, is used by them for fuel."[2]

The narrative of Di Conti, as it is printed by Ramusio, from a Portuguese version, contains a passage not found in Poggio, in which it is alleged that a river of Ceylon, called Arotan, has a fish somewhat like the torpedo, but whose touch, instead of electrifying, produces a fever so long as it is held in the hand, relief being instantaneous on letting it go.[3]

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[1] *De Varietate Fortunæ*, Basil, 1538. An admirable translation of the narrative of Di Conti has recently been made by R. H. Major, Esq., for the Hakluyt Society. London, 1857.

[2] Poggio makes Nicolo di Conti say that the island contains a lake, in the middle of which is a city three miles in circumference; but this is evidently an amplification of his own, borrowed from the passage in which Pliny (whom Poggio elsewhere quotes) alludes to the fabulous Lake Megisba.—Pliny, lib. vi. ch. xxiv.

[3] Di Conti in *Ramusio*, vol. i. p. 344. There are two other Italian travellers of this century who touched

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The sixteenth century was prolific in navigators, the accounts of whose adventures served to diffuse throughout Europe a general knowledge of Ceylon, at least as it was known superficially before the arrival of the Portuguese. Ludovico Barthema, or Varthema, a Bolognese[1], remained at a port on the west coast[2] for some days in 1506. The four kings of the island being busily engaged in civil war[3], he found it difficult to land, but he learned that permission to search for jewels at the foot of Adam's Peak might be obtained by the payment of five ducats, and restoring as a royalty all gems over ten carats. Fruit was delicious and abundant, especially artichokes and oranges[4], but rice was so insufficiently cultivated that the sovereigns of the island were dependent for their supplies upon the King of Narsingha, on the continent of India.[5] This statement of Barthema is without qualification; there can be little doubt that it applied chiefly to the southern parts of the island, and that the north was still able to produce food sufficient for the wants of the inhabitants.

Barthema found the supply of cinnamon small, and so precarious that the cutting took place but once in three years. The Singhalese were at that time ignorant of

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at Ceylon; one a "Gentleman of Florence," whose story is printed by Ramusio (but without the author's name), who accompanied Vasco de Gama, in the year 1479, in his voyage to Calicut, and who speaks of the trees "che fanno la canella in molta perfettione."—Vol. i. p. 120. The other is Girolamo di Santo Stefano, a Genoese, who, in pursuit of commerce, made a journey to India which he described on his return in 1499, in a letter inserted by Ramusio in his collection of voyages. He stayed but one day in the island, and saw only its coco-nuts, jewels, and cinnamon. —Vol. i. p. 345.

[1] *Itinerario de* Ludovico de Varthema, *Bolognese, no lo Egypto, ne la Suria, ne la Arabia Deserta e Felice, ne la Persia, ne la India, e ne la Æthiopia — la fede el vivere e costume de tutte le prefatte provincie.* Roma. 1511, A. D.

[2] Probably Colombo.

[3] These conflicts and the actors in them are described in the *Rajavali*, p. 274.

[4] "Carzofoli megliori che li nostri, melangoli dolci, li megliori credo, che siano nel mondo."— *Varthema*, pt. xxvii.

[5] "In questo paese non nasce riso; ma ne li viene da terra ferma. Li re de quella isola sono tributarii d'il re de Narsinga per repetto del riso." — *Itin.*, pt. xxvii. See also Barbosa, in *Ramusio*, vol. i. p. 312.

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the use of gunpowder[1], and their arms were swords and lance-heads mounted on shafts of bamboo; "with these they fought, but their battles were not bloody." The Moors were in possession of the trade, and the king sent a message to Varthema and his companions, expressive of his desire to purchase their commodities; but in consequence of a hint that payment would be regulated by the royal discretion, the Italians weighed anchor at nightfall and bade a sudden adieu to Ceylon.

Early in the sixteenth century, ODOARDO BARBOSA, a Portuguese captain, who had sailed in the Indian seas, compiled a *summary* of all that was then known concerning the countries of the East[2], with which the people of Portugal had been brought into connection by their recent discovery of the passage round the Cape of Good Hope. Writing partly from personal observation, but chiefly from information obtained from the previous accounts of Di Conti, Barthema and Corsali[3], he speaks of that "grandest and most lovely island, which the Moors of Arabia, Persia, and Syria call Zeilam, but the Indians, *Tenarisim*, or the *land of delights*." Its ports were crowded with Moors, who monopolised commerce, and its inhabitants, whose complexions were fair and their stature robust and stately, were altogether devoted to pleasure and indifferent to arms.

Barbosa appears to have associated chiefly with the Moors, whose character and customs he describes almost as they exist at the present day. He speaks of their heads, covered with the finest handkerchiefs; of their ear-rings, so heavy with jewels that they hang down to

[1] The *Rajavali*, p. 279, describes the wonder of the Singhalese on witnessing for the first time the discharge of a cannon by the Portuguese who had landed at Colombo, A. D. 1517. "A ball shot from one of them, after flying some leagues, will break a castle of marble, or even of iron."

[2] *Il Sommario delle Inde Orientale di* ODOARDO BARBOSA, Lisbon, 1519. A sketch of the life of BARBOSA is given in CRAWFURD'S *Dictionary of the Indian Islands*, p. 39.

[3] Two letters written by ANDREA CORSALI, a Florentine, dated from Cochin, A. D. 1515, and addressed to the Grand Duke Julian de Medicis.

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their shoulders; of the upper parts of their bodies exposed, but the lower portions enveloped in silks and rich cloths, secured by an embroidered girdle. He describes their language as a mixture of Arabic and Malabar, and states that numbers of their co-religionists from the Indian coast resorted constantly to Ceylon, and established themselves there as traders, attracted by the delights of the climate, and the luxury and abundance of the island, but above all by the unlimited freedom which they enjoyed under its government. The duration of life was longer in Ceylon than in any country of India. With a profusion of fruits of every kind, and of animals fit for food, grain alone was deficient; rice was largely imported from the Coromandel coast, and sugar from Bengal.

Di Conti and Barthema had ascertained the existence of cinnamon as a production of the island, but Barbosa was the first European who asserted its superiority over that of all other countries. Elephants captured by order of the King, were tamed, trained, and sold to the princes of India, whose agents arrived annually in quest of them. The pearls of Manaar and the gems of Adam's Peak were the principal riches of Ceylon. The cat's-eye, according to Barbosa, was as highly valued as the ruby by the dealers in India; and the rubies themselves were preferred to those of Pegu on account of their density[1]; but, compared with those of Ava, they were inferior in colour, a defect which the Moors were skilled in correcting by the application of fire.

The residence of the King was at "Colmucho" (Colombo), whither vessels coming for elephants, cinnamon,

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[1] Cesare de Frederici, a Venetian merchant, whose travels in India, A.D. 1563, have been translated by Hickocke, says of Zeilan, that, "they find there some rubies, but I have sold rubies well there that I brought with me from Pegu."—In *Hakluyt*, vol. i. p. 226.

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and gems brought fine cloths from Cambay, together with saffron, coral, quicksilver, vermilion, and specie, and above all silver, which was more in demand than all the rest.

Such is the sum of intelligence concerning Ceylon recorded by the Genoese and Venetians during the three centuries in which they were conversant with the commerce of India. Their interest in the island had been rendered paramount by the events of the first Crusades, but it was extinguished by the discovery of the passage round the Cape of Good Hope. In the period which intervened the word *traveller* may be said to have been synonymous with merchant[1], and when the occupation of the latter was withdrawn, the adventures of the other were suspended. The vessels of the strangers, in a very few years after their first appearance in the Indian seas, began to divert from its accustomed channel, the stream of commerce which for so many ages had flowed in the direction of the Red Sea and the Persian Gulf; and the galleons of Portugal superseded the caravans of Arabia and the argosies of Venice.

[1] CÆSAR FREDERICK opens the account of his wanderings in India, A.D. 1563, as follows:—"Having for the space of eighteen years continually coasted and travelled in many countries beyond the Indies, *wherein I have had both good and ill success in my travels*," &c. He may be regarded as the last of the merchant voyagers of Venice. His book was translated into English almost simultaneously with its appearance in Italian, under the title of "*The Voyages and Travaile of M. Cæsar Fredrick, Merchant of Venice, into the East Indies, and beyond the Indies*, written at sea, in the Hercules of London, the 25th March, 1588, and translated out of Italian by Mr. THOMAS HICKOCKE, Lond., 4to. 1588." The author, who left Venice in 1563, crossed over from Cape Comorin to Chilaw, to be present at the fishery of pearls, which he describes almost as it is practised at the present time. The divers engaged in it were all Christians (see *Christianity in Ceylon*, ch. i. p. 11), under the care of friars of the order of St. Paul. Colombo was then a hold of the Portuguese, but without "walles or enemies;" and thence "to see how they gather the sinnamon, or take it from the tree that it groweth on (because the time that I was there, was the season that they gather it, in the moneth of Aprill) I, to satisfie my desire, went into a wood three miles from the citie, although in great danger, the Portugals being in arms, and in the field with the king of the country." Here he gives with great accuracy the particulars of the process of peeling cinnamon, as it is still practised by the Chalias.

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In his dismay the Sultan of Egypt threatened to demolish the sacred remains of Jerusalem, should the infidels of Europe persist in annihilating the trade of the Desert. Stimulated by the Doge, he attacked the Portuguese merchantmen in the Indian seas, and destroyed a convoy off the coast of Cochin; an outrage for which Albuquerque meditated a splendid revenge by an expedition to plunder Mecca and Medina, and to consummate the desolation of Egypt by diverting the Nile to the Red Sea, across Nubia or Abyssinia![1]

But the catastrophe was inevitable; the rich freights of India and China were carried round the "Cape of Storms," and no longer slowly borne on the Tigris and the Nile. The harbours of Ormus and of Bassora became deserted; and on the shores of Asia Minor, where the commerce of Italy had intrenched itself in castles of almost feudal pretension, the rivalries of Genoa and Venice were extinguished in the same calamitous decay.

[1] DARU, *Hist. de Venise*, lib. xix. p. 114. RAYNAL, *Hist. des Deux Indes*, vol. i. p. 156. FARIA Y SOUZA, *Portug. Asia*, pt. i. ch. viii. vol. i. pp. 64, 83, 107, 137.

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